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ORIGINAL ARTICLES.

THE COAGULATION OF THE BLOOD.¹

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IN the following review of the more recent investigations regarding the coagulation of the blood, it is intended to report on some of the more important facts in the first place and to briefly consider afterward what is usually termed the "theory of the coagulation of the blood," which really, however, comprises only one phase of the process of coagulation. I shall not limit myself to a consideration of the vertebrate blood, but shall include in this review the blood of invertebrates. It is clear that in elucidating difficult problems, containing many unknown factors, it is of advantage to have as large a number of equations as possible. The following report must necessarily be of a fragmentary character and can only consider certain aspects of the problem:

1. The inclusion of invertebrate blood, as for instance that of the lobster, in this review, is justified because recent investigations have shown the great similarity which exists between the coagulation of vertebrate and invertebrate blood. This applies to the coagulation of the fibrinogen proper, which is present in a colloidal solution in the plasma. It also applies to the phenomena of agglutination, which in the case of vertebrates as well as invertebrates, precede the coagulation of the fibrinogen consisting in the former class of animals in an agglutination of the blood plates and in the latter in an agglutination of the ameboid blood cells. The conditions determining these agglutinative phenomena are different from those which determine the coagulation proper, although the changes taking place in these cellular elements are in all probability of the greatest significance in the following coagulation.

2. It is a well-known fact that the presence of foreign bodies may accelerate the coagulation of the blood or of the blood plasma. The rate of this acceleration differs in different kinds of plasma, and a close parallelism does not exist between the coagulative strength shown by certain solid bodies and by other more specific agencies which accelerate the coagulation of the blood. In a blood plasma prepared in a certain way, the former may be very effective and the latter very inefficient and vice versa. One of the factors which seems to increase the efficiency of chemically inert solid substances in accelerating the coagulation seems to be their power of absorbing water. The mechanism of the action of solid

bodies is little known, and a comparative investigation of the actions of different varieties of solid bodies would be of great interest.

It is necessary to distinguish between the power of solid chemically inert substances of accelerating the coagulation of the blood and another property of solid bodies, namely that of determining where the fibrin which has been formed is first deposited. In the latter case the action of the solid body is probably merely a mechanical one. The first fibrin formed sticks to the solid particles suspended in the fluid and retracts around them as their center. As we shall see later, there are certain solid substances of animal origin, which have a specific influence upon the blood plasma causing the coagulation of the fibrinogen in their immediate neighborhood.

The fibrin thus deposited around solid bodies has the appearance of a homogeneous gelatinous mass. Through certain mechanical agencies (traction and pressure) this gelatinous mass can be transformed into a system of fibers. In this connection it might be appropriate to mention the so-called coagulation centers, described by Hauser. Under certain conditions fibrils of fibrin are seen radiating either from a dying cell, or from blood plates, or from chemically inert foreign bodies. It seems very likely to me that also in this case the formation of fibers around these centers is only a secondary process, due to mechanical factors acting upon fibrin which was at first gelatinous.

3. The influence of foreign bodies upon the blood becomes very apparent in the experiments of Freund and Haycraft, who succeeded in preserving the liquid state of the blood by keeping it in contact with vaseline or with fatty substances. Recently Bordet and Gengou undertook to prove that the influence of the glass, with which the blood is brought in contact, consisted in a conversion of the proferment into a ferment, a process which was accelerated by glass and which was not accelerated or only to a much less degree by such substances as paraffin. Bordet and Gengou found that the plasma after its coagulation had taken place, in the glass, contained more ferment than did the not yet coagulated plasma in the paraffin tube. It is, however, almost certain that this mode of action is not the only one exerted by solid substances.

Another way in which foreign bodies may influence the coagulation of the blood is by their action upon the cells of the blood. This can be best studied in the blood of certain arthropods, as for instance of *Limulus*, which contain only one kind of blood cells. If we collect the blood of a *Limulus* by means of a very clean cannula from the heart of the animal and receive it

¹ Read by invitation before the Pathological Society of Philadelphia.

on a clean slide, instead of collecting it by merely pushing a fine scalpel into the heart, the blood may show no changes with the exception perhaps of a slight agglutination of a certain number of blood cells, which, however, remain oval or round and preserve their granules. Gradually the blood corpuscles sink to the surface of the slide, and those cells which have come into contact with or near the glass begin to show changes of form, sending out pseudopodia and gradually undergoing destructive changes, losing for instance, their granules. Notwithstanding these changes taking place in the cells, the supernatant plasma does not coagulate, because it contains very little, if any, fibrinogen. If, on the other hand, we collect in a similar way the blood of a lobster, which possesses fibrinogen, it is possible to delay but it is not possible to prevent the coagulation of the blood, the changes which gradually take place in the blood corpuscles causing the coagulation of the blood. At least I have not succeeded in preventing the coagulation of the lobster blood by the use of a canula. Haycraft found that by collecting the blood in such a manner that it is surrounded by oil, its coagulation can be prevented. The blood corpuscles, which are completely surrounded by oil, do not send out pseudopodia and are, as I found, not at all or only very slightly changed. We see, therefore, that the same circumstances, which according to Bordet and Gengou cause the new formation of fibrin ferment in the plasma, lead to amoeboid movements of the cells and to destructive cell changes. This analogy between the influence of external media upon ferments and cells is of great interest. In both cases the indirect results are identical, producing the coagulation of the fibrinogen. If we remove the cells as rapidly as possible from the blood plasma after the shedding of the blood, the coagulation of the lobster plasma can be prevented for a much longer period than would otherwise be possible. The cells are therefore entirely or to a great extent responsible for the coagulation of the plasma. In order to determine the causes of the apparently spontaneous coagulation of the blood, it is of the greatest importance to analyze still closer the factors leading to these cell changes.

Is a certain mechanical factor, namely the pressure of the narrow wound upon the outflowing cells, or is the influence of contact with the surrounding tissue, e.g., muscle tissue, of the greatest importance in causing these cell changes in the case the blood leaves the body through the wound directly without the aid of a canula? If in the case of *Limulus* we use instead a clean canula, a canula containing dust particles, or, if we collect the blood instead in a dry dish or on a clean slide, in a dish containing some sea water or a NaCl solution of corresponding osmotic pressure the cell changes are not prevented and are just as marked as if the blood had been collected in muscle extract, the cell changes simulating a true coagulation of the blood. We

are, therefore, led to the conclusion that mechanical factors are of main importance in determining the changes in the blood cells and indirectly the coagulation of the blood, and that the influence of the tissue is not necessary for the rapid coagulation of the blood flowing out of wounds and, therefore, the main significance of the use of the canula consists in its safeguarding the cells which are of a labile character against the shock produced by the pressure of a narrow wound.

4. These facts and considerations have significant bearing on the interpretation of the results obtained by Delezenne, who found that by collecting birds blood through a clean canula under conditions which prevented the contact of the blood with the tissues, the blood can remain liquid for many hours, and if freed from cells, for many days. Delezenne interpreted these results as mainly due to the absence of the action exerted by the tissues. That the tissue extracts have a powerful action upon the coagulation of the blood can easily be demonstrated. It can, however, be only a question of such a slight amount of substance, which can be extracted from the tissues by the blood passing through a wound, that it becomes probable that the conditions are here analogous to those found in the blood of *Limulus*. If the blood flows through an uneven wound, certain cellular elements of the blood undergo marked changes and substances accelerating the coagulation are admixed to the blood. According to this hypothesis the mechanical conditions of the wound are of primary importance; the action of the tissue coagulins would be a secondary one. For the understanding of the causes underlying the coagulation it would be of great value to determine experimentally what the relative importance of these two factors is. It is not possible to delay the coagulation of the blood of mammals as markedly as that of birds by collecting it through a canula. In this case again it is not unlikely that this difference is due to a different degree of sensitiveness of the cellular elements in birds' blood on the one hand and in mammalian blood on the other.

5. In connection with the effect of chemically inert solid bodies the action of another kind of foreign particles, namely the action of bacteria upon the coagulation of the blood may be considered. The connection between intravascular clotting or thrombosis on the one hand and certain infectious diseases or local infections around the blood vessels on the other hand, has long since been recognized. There exist, however, several possibilities of explaining this relationship. An experimental analysis of the different factors concerned is necessary and a direct examination of the effect of bacteria on the coagulation of the blood suggests itself in the first instance. Much as the influence of bacteria on a great variety of culture media and on the coagulation of milk has been investigated, the problem of the effect of bacteria on the coagulation of the blood has, to my knowledge, never been approached until re-

cently. The reason for this neglect has probably been the difficulty of getting blood plasma in a suitable condition for such an examination. For this purpose a plasma is required which can be prepared without the addition of chemical substances which themselves might influence the bacteria or their products. Birds' plasma prepared according to the method of Delezenne satisfies this condition. In experiments carried out in this way, typical differences were found to exist between different bacteria in their power of coagulating the blood. The *Staphylococcus pyogenes aureus* used in these experiments was, for instance, much more powerful than the *Bacillus coli*; furthermore it was found that by boiling the culture its efficacy was to a great extent destroyed. The action of bacteria is, therefore, not identical with that of chemically inert foreign particles. Combined with this action of the bacteria on the fibrinogen may be a precipitating effect on albuminous bodies of the blood serum as described by Libman and others. Pathological conditions more than any other make a further working out of these problems very desirable.

6. As we mentioned before, it is necessary to remove all cellular elements from the blood either by means of centrifugalization or otherwise, in order to keep the normal blood liquid for a long period without addition of certain chemically active substances. This holds good for the blood of birds which has been collected by means of a clean canula, as well as for mammalian blood which can be kept liquid, if received in a certain proportions of a 0.85 per cent. NaCl solution previously heated to 56° to 57° C. and centrifugalized directly afterward. In a similar way it holds good for invertebrate blood. If we remove, for instance, the agglutinated cells (cellular fibrin) from the blood of the lobster and dilute the plasma in certain proportions with water, we can frequently keep it fluid for a considerable time. Coagulation can be delayed indefinitely if this plasma is afterward heated to 45° to 52° C. for one hour. If to the plasma of birds or mammalian plasma, which has been deprived of its cells, a piece of a blood-clot, or, if to the lobster plasma a piece of the so-called first clot, containing the blood cells is added, a rapid coagulation usually takes place. The same holds good if to birds' plasma and lobster plasma a piece of birds' and lobster muscle respectively is put. On the other hand, I have repeatedly observed that when to diluted bird plasma the centrifugalized goose blood corpuscles were added, their accelerating effect upon the coagulation was relatively slight, although in fresh, undiluted blood, the corpuscles have a distinct accelerating effect. It will be necessary to submit to a still closer analysis the condition under which the blood cells are active and under which they lose their efficiency.

The conditions are similar in the case of lymph as in the case of the blood, as was recently found by Répin. This investigator succeeded in keep-

ing the lymph of the horse liquid when he collected it from the thoracic duct by the aid of a canula. This fact may become of importance if we take into consideration that in the case of the lymph we have principally to deal with one single kind of cells, the leucocytes, and especially the lymphocytes in contradistinction to the complex character of the cells in the vertebrate blood. Nevertheless all the conditions necessary for the coagulation of the blood are present in the lymph and it might, therefore, be of some advantage to investigate the coagulation of the lymph or the coagulation of invertebrate blood, where the conditions are of a relatively simple character rather than to concentrate all efforts upon vertebrate blood.

7. We see, therefore, that at least one or perhaps several elements accelerating the coagulation of the blood are derived from the blood cells. It is probably this same accelerating factor originating from the blood cells, which is afterward, when the coagulation is finished, found in the serum perhaps in a modified form or aided by some new elements. This active principle corresponds in part at least to the thrombin of Alex. Schmidt. A second factor exists, which is of prime importance, for the coagulation of the blood. Different tissues contain substances, which are very powerful in the coagulation of the blood, and these substances can be extracted by water. The substances present in the tissues were either in a somewhat modified form or mixed with other products known to the older investigators, as for instance Alex. Schmidt and Wooldridge. Alex. Schmidt usually used alcoholic extracts. Wooldridge used substances precipitated by acid and soluble in alkali. Both of these authors distinguished between the agency in the blood and the one present in the tissues. Later, however, when under the influence of the work of Arthus, Pekelharing and Hammarsten, the significance of calcium on the coagulation of the blood was clearly demonstrated, and when Pekelharing tried to prove the nucleoprotein character of the thrombin, there was a tendency to regard the chemical agencies present in the blood and those present in the tissues as identical. Pekelharing and Huiskamp believed to have isolated the active substance in the form of the calcium salt of nucleoprotein or of nucleohiston; in the opinion of these investigators the active substance of the serum as well as of the tissues being a nucleoprotein. From the thymus they isolated a nucleohiston. Recent investigations, however, tend to show the existence of a marked difference between the character of these two substances and make it therefore probable that they are not identical.

8. Delezenne found that birds' blood which coagulates very slowly, if collected through a canula, coagulates very rapidly, if it is mixed with extracts of birds' tissues. He interpreted the power birds' tissues possess of accelerating the coagulation of blood as a compensatory

mechanism intended to make good for the corresponding deficiency in the coagulating power of the blood itself. Later Conradi tried a large variety of tissue extracts and found all of them very active in accelerating the coagulation of the blood.

The fact found by Delezenne and new observations made on the blood of invertebrates led me to assume a specificity of the active principles of the tissue extracts, which I called tissue coagulins in analogy with the substances obtained by artificial immunization.

In a series of comparative investigations I found this specificity to exist in vertebrates as well as in invertebrates. The specific difference in the action of tissues of different classes of animals makes it possible to distinguish between the muscles of two animals as nearly related as the lobster and the blue crab. In this case we have truly to deal with a "biologic test" for tissues, a test moreover for which no preliminary artificial immunization of the animals concerned is required. The blood of amphibia, reptiles and birds is especially favorable for these investigations, less favorable is mammalian blood, which usually coagulates rapidly in contact with any tissue, although differences could be shown to exist in the relation of mammalian blood toward the tissue coagulins of certain classes of animals. Between different birds and between different mammals (and probably also between different reptiles and amphibia) it is not possible, except in the case of certain animals, to demonstrate the existence of a specificity. We have, therefore, to deal with a class specificity rather than with a species specificity, although it is quite possible that a still further specificity does exist and that complicating factors prevent it from becoming demonstrable. Such substances as the tissue coagulins might be called "specifically adapted" substances, the term specific being frequently used to designate merely a difference in chemical character. I suggested on former occasions that the origin of such specifically adapted substances might be due to a process of auto-immunization; similar considerations might apply to the origin of other ferment-like substances. In the case of the active substances of the blood, a specific adaptation exists only in so far as the thrombin of vertebrates is without effect upon the blood of invertebrates. These results have recently been confirmed by Muraschew, who also found a specificity of tissue coagulins and a lack of specificity in the case of the blood coagulins although the methods used by this investigator were in part at least based on probably incorrect conceptions.

9. There exist further differences between these two substances: (a) They act differently on the blood plasma which has been deprived of calcium, as for instance fluorid plasma and oxalatplasma, in regard to which the active principle of the blood, the thrombin, is more effective than the tissue coagulins. (b) They act dif-

ferently on pepton plasma, which responds more or less easily to tissue coagulins and little or not at all to serum (thrombin). (c) They behave differently in regard to fibrinogen which coagulates under the influence of serum and not under the influence of tissue coagulins. In many, but not in all cases the latter, however, becomes active after addition of calcium to the fibrinogen. (d) The active substances contained in the tissues are, provided putrefaction is prevented, more resistant than the thrombin. With relatively slight modifications the same differences exist in invertebrates between extracts of tissues, *i.e.*, of muscle and extracts of the blood cells, which are contained in the so-called first coagulum. Of special interest is the fact that the tissue coagulins are to a great extent dependent on the presence of a certain amount of calcium, that the active substances of the blood on the other hand are active even without the presence of any or of more than a very small amount of calcium. A further difference I found to exist in vertebrates as well as in invertebrates, in the behavior of the two substances toward the dilution of the blood plasma, the tissue coagulins losing their activity much more rapidly if the blood plasma is gradually diluted than do the active substances of the blood, although in the undiluted plasma the tissue coagulins may even have surpassed in efficiency the thrombin of the serum. In all probability, therefore, we have, in the case of the tissue and blood coagulins, to deal with two different substances.

10. An interesting fact, which has already been observed by Alex. Schmidt, is that under a variety of circumstances, the combined action of these two substances, causes a decided increase in their efficiency. Equal amounts of blood and tissue coagulins act stronger than would the double amount of either blood or tissue coagulin alone. This fact has been recently confirmed by Morawitz, who used for these experiments fibrinogen and who could show that even in cases in which tissue coagulins and calcium alone were without effect upon fibrinogen, a combination of these two with blood serum was much more effective than blood serum alone. A similar increase in activity I found if a combination of these two substances acted upon fluorid plasma. In invertebrate blood I was unable to observe any marked increase in activity to exist in the case of a combination of blood and tissue coagulins. The fact that the combined action of two substances is greater than the sum of the action of each individual substance becomes of great interest if side by side with it certain facts found in the studies of immunity are considered. Two substances, amboceptor and complement, combine to exert a bacteriolytic or a hemolytic action. Lecithin enables the active principle of cobra venom to become a hemolytic poison. According to Alex. Schmidt lecithin seems to increase in a similar way the coagulative power of blood serum. A further analogy exists in the

case of trypsinogen which becomes active when combined with enterokinase. In the study of the coagulation of the blood, we meet, therefore, with phenomena related to those which have been very prominent in recent investigations in immunity. Another fact which shows still closer the relationship between these two fields of investigation, immunity and coagulation of the blood, has already been referred to above, namely the specificity of tissue coagulins which suggests their origin as being due to a process of auto-immunization.

Surprising as this increase in activity of two combined substances may appear, similar phenomena have been observed in the case of several relatively simple inorganic reactions, in which the combination of two catalytically active inorganic salts increases markedly the rapidity of the process. A fact especially noteworthy is that in this instance both salts already act uncombined as catalysers. It is necessary to consider this aspect of the problem of coagulation in greater detail because, as we shall see later, the fact of this increase in activity which is produced by the combination of tissue and blood coagulins, plays a very prominent part in the theory of the coagulation of the blood, and it is, therefore, necessary to collect all analogous facts in order to obtain a sound basis from which to judge certain theoretical conclusions. Alex. Schmidt observed an acceleration of the coagulation to take place, when he combined the action of his thrombin, a watery extract of the alcoholic precipitate of blood serum and of tissue extract on the peritoneal fluid of a horse, one of those liquids which were called by him paraplasmic.

11. Another somewhat similar phenomenon of activation has been recently observed by Bordet and Gengou. In this case the addition of serum, which contained only a small quantity of active thrombin was able in causing the coagulation of diluted, salted plasma, to create in this plasma a large quantity of active thrombin, which was strong enough to produce the rapid coagulation of oxalated blood. We have mentioned that according to Bordet and Gengou a similar production of active thrombin was brought about by the effect of the contact with glass upon the plasma. These experiments of Bordet and Gengou are, however, complicated by an intervening coagulation of the fluid in which the new formation of thrombin is later found to have taken place. These investigators bring about the coagulation of the plasma through the action of a mechanical or chemical agency. They compare the amount of ferment present in the blood plasma before the coagulation has started with the quantity of ferment present in the serum after coagulation has taken place and find the serum a much more active fluid than the coagulated plasma had been. They conclude that the agency bringing about the coagulation of the plasma was able of producing this result by means of a creation of new ferment. This

may be correct; the argument would, however, be still stronger if it were possible to demonstrate a production of active thrombin in serum, which does not coagulate instead of in plasma by the same mechanical or chemical agencies. In the course of the ordinary coagulation of the blood, which apparently takes place spontaneously, a similar apparent new formation of thrombin can be noticed; moreover, the maximum of the new formation of thrombin was found by Arthus some time after completed coagulation, so that one may assume that the new formation of the ferment continues even after the coagulation of the blood has been finished. Another way of increasing the power of serum, which was already known to Alex. Schmidt and was recently confirmed by Fuld and Morawitz, consists in adding alkali or acid to the serum, and in subsequently neutralizing it.

When we cause the coagulation of goose plasma by the addition of a piece of birds' tissue or of a piece of blood coagulin, there is no indication that new thrombin has been formed in the plasma undergoing coagulation. The same applies to lobster plasma, which clots under the influence of a piece of lobster muscle or of the agglutinated blood cells of the lobster. It holds good also for goose blood, obtained by the aid of a clean canula. If we test at different periods the blood during the slow process of coagulation, no appreciable amount of newly formed thrombin, which would be able to cause the coagulation of fluorid plasma can be found. We have, therefore, reason to believe that under these conditions the substances extracted from the coagulum or from the agglutinated blood cells and from tissues are sufficient to account for the coagulation of the plasma.

12. There are, therefore, one or more substances present in the blood cells, which accelerate the coagulation of the blood, and which are of decisive importance for the coagulation of the blood or lymph. It is certain that in the blood of the lobster this substance is found in the one variety of blood cells which this animal possesses. It is possible to extract this substance from the cells under certain conditions. I found a great difference to exist in the efficiency of different procedures of extraction. A pure sodium chloride solution was found to be unfavorable as a means of extraction. The addition of calcium chloride improves the result of the extraction; there are, however, probably other substances besides calcium of importance in this process. In this case as in so many other conditions an antagonism exists between the action of calcium and sodium. There can be little doubt that in the case of the lymph the active substances are contained in the leucocytes and especially in the mononuclear variety, the lymphocytes.

13. The question is more complicated if we consider vertebrate, especially mammalian blood. Alex. Schmidt believed the mother substance of the thrombin to be derived from the leucocytes,

which, according to him, transmit it in part at least already to the circulating blood. Besides the zymoplastic substance (tissue coagulin), he believes the leucocytes to contain a second substance, the prothrombin, as the mother substance of the active ferment was called. This substance, according to Schmidt, was also to be found in the other varieties of blood cells and in tissues. Other investigators, however, as Bizzozero, believed the blood plates to be the source of the prothrombin. Pratt showed that in many cases there did not exist a direct relationship between the number of the plates and the coagulation time of the blood. Recently, however, Morawitz succeeded in preparing an extract from blood plates, which behaved very much like the mother substance of thrombin toward fibrinogen. It is not unlikely that the blood plates do contain such a substance. The apparently similar behavior of the blood plates and of the blood cells of invertebrates, as for instance of the lobster, seems to favor such a view, both kinds of cellular elements undergoing rapid changes after the shedding of the blood, both sending out pseudopodia, in both probably partial processes of solution taking place and both agglutinating—this agglutination in the case of vertebrate, as well as of invertebrate blood, being independent of the coagulation of the fibrinogen. These analogies make it possible to assume that the blood plates are the source of the mammalian prothrombin. There are, however, some objections to be considered. The lymph coagulates without containing blood plates. I found, furthermore, the red blood corpuscles to accelerate the action of serum as well as that of the tissue extracts. In the latter respect the red blood corpuscles behave, therefore, like the blood coagulin (the active substance of the serum). Morawitz found leucocytes, which he obtained from a sterile pleural or peritoneal exudate free from the blood coagulins, although the leucocytes were alive. This, however, does not absolutely disprove that these cells do contain the active substance when circulating in the blood. We know that the production of ferment-like substances is dependent on a number of environmental conditions. It is, therefore, not certain that the red and white blood cells contain exclusively tissue coagulins. In this case we should expect extracts from white and red corpuscles to show the same specificity, which is characteristic of tissue extracts. It would be of interest to undertake investigations in this direction. It is believed by a large number of investigators that the blood plates are the extruded central substances of nucleated blood corpuscles, containing part of the nuclear substance. If this view is correct it would be difficult to see why the blood coagulins (prothrombin) should be limited to the nuclear substance of one kind of cellular elements. We see, therefore, that it is not very likely that the blood coagulins are solely derived from the blood plates, but that a number of facts render it more

probable that other cellular elements may also be the source of this substance.

14. In regard to the chemical character of these two substances, the blood and tissue coagulins, nothing definite is known; they share this fate with the other organic ferment-like substances. It is not certain that they are nucleoproteids as Pekelharing and Huiskamp assume. According to Morawitz, it is possible to obtain extracts of tissues, which are still active without it being possible to demonstrate the presence of a nucleoproteid. Instead of trying to prepare the active principle from such organs as lymph glands and thymus, which are exceedingly rich in nuclein substances, it would perhaps be advisable to use muscle tissue, which is also very active and contains only very little nucleoproteid. If we consider on the one hand the great difference existing between the amount of nucleoproteid of liver and muscle, on the other hand the great activity of muscle tissue, which in the case of birds is hardly inferior to that of the liver, it becomes unlikely that the nucleoproteids and nucleohistons of the different organs are the active principles, although at present it must be considered possible that the nucleoproteids or nucleohistons may have an accelerating effect upon the coagulation of the blood.

15. Comparative study of the effect of different organs upon the coagulation of the blood would not be without pathological interest, if we consider the pathological importance of hemorrhages. Liver and kidney of the dog are very active, the latter, however, is more active than the former. The pancreas was found to be less active, though not entirely ineffective. Very efficient in causing the coagulation of the blood is the mucus covering the intestine, a fact not without significance in case of intestinal hemorrhages. During autolysis of organs I found the tissue coagulins gradually to disappear in the remaining solid substance which had escaped liquefaction. Conradi had observed that in the liquid produced by the splitting action of autolytic ferments, substances inhibiting the coagulation of the blood were formed. On the other hand, in organs undergoing the changes characteristic of phosphorus poisoning, I could not find any decrease in the quantity of tissue coagulins, although in phosphorus poisoning the changes taking place in certain organs have some similarity to autolytic processes. In the blood, however, marked changes are taking place during phosphorus poisoning, as Corin and Ansiaux had found. They noticed a disappearance of fibrinogen and thrombin (blood coagulins). I could confirm these observations, and I found, moreover, that these two substances disappear in a similar ratio. The loss in the amount of fibrinogen varies in different cases of phosphorus poisoning, and the amount of thrombin lost varies correspondingly. In this case it appears as if the liver was of direct or indirect importance for the formation of fibrinogen and of blood coagulin.

There exist a few more data in regard to the importance of different organs for the coagulation of the blood. Contejean and Delezenne found that the substance inhibiting the coagulation of the blood which is formed after injection of pepton in dogs, can only be formed if the liver is present. Meltzer and Salant observed that after nephrectomy the coagulation of rabbit blood is markedly delayed. It is at present impossible to state in which way the functioning of the liver affects the quantity of fibrinogen or fibrin ferment present in the blood, and in the case of the extirpation of the kidneys the cause of the delay in the clotting of the blood is as yet unknown.

16. There are not only substances present in the tissues and in the blood itself causing or accelerating the coagulation of the blood, but also substances or mechanisms inhibiting it. Alex. Schmidt extracted from tissues or cells an inhibiting substance which he called cytoglobulin. I found in the muscle of arthropods not only a substance accelerating the coagulation of the blood, but also another one inhibiting it. The effect of the muscle extract upon the blood is therefore equal to the sum of these counteracting processes. A similar substance complicates perhaps the action of the tissues of vertebrates. It has been found that in pepton blood or in fluorid and oxalat plasma, substances are present inhibiting the coagulation of blood to which they are added. It is very probable that such inhibiting factors exist in the normal plasma or serum, to which no chemical substances as oxalates or fluorids have been previously added. I found such a substance, or more generally speaking, such a mechanism in the dog serum which inhibits the action of tissue coagulins upon the coagulation of pepton blood, and Muraschew found it to exist in the case of goose plasma. In both cases there are indications that these mechanisms or substances are of a similar specific character as the tissue coagulins.

Other substances exist inhibiting the coagulation of the blood, as, for instance, leech extract, which acts on the thrombin of vertebrates, neutralizing it, and which is without action on invertebrate blood. There is a similar substance present in anchylostoma. Other inhibiting substances of a different kind have been found in certain snake toxins, the action of which on the coagulation of the blood was investigated many years ago by Weir Mitchell and Reichert. From the investigations of Morawitz it is likely that in the case of cobra poison this inhibiting substance acts mainly by antagonizing the tissue coagulins. A similar substance is present in the blood which has become uncoagulable after injection of tissue coagulins in the circulation of the blood.

17. If we inject tissue extracts into the vein of an animal a rapid and extensive intravascular coagulation is produced. This is followed by the formation of a so-called negative phase, in

which the blood coagulates less rapidly or not at all. If we inject, on the other hand, even activated blood serum of the same species, no intravascular coagulation is produced; the same holds good for small or medium doses of the serum of another species. The latter serum may, however, be able to produce intravascular clotting, if it is injected in very large quantities. In this respect intravascular blood behaves, like pepton blood, an analogy which led Wooldridge to believe that pepton blood corresponded most closely to the blood in its natural condition.

18. Let us now consider some of the so-called theories of the coagulation of the blood. The discovery that the coagulation of the blood is caused by substances which act as catalysers is due to Alex. Schmidt. He assumed that the leucocytes produce the proferment which, according to him, is already present in the circulating blood. Under the influence of the zymoplastic substances derived from leucocytes and other cells, this proferment is transformed into the active thrombin, which alone causes the coagulation of the fibrinogen. Arthus, Pekelharing and Hammarsten showed that calcium was necessary for the coagulation of the blood. The two former believed at first that the calcium went into combination with the fibrinogen. Pekelharing believed it also to be necessary for the formation of ferment out of proferment. Hammarsten showed that the latter was the only function of the calcium, and that it did not combine with the fibrinogen to form fibrin. Recently Morawitz and Fuld undertook to combine both of these theories. According to Morawitz the blood plates shed the thrombogen. The latter under the influence of tissue coagulin which, in analogy to enterokinase, he calls thrombokinas, is transformed into prothrombin; the latter combines with calcium to become the active ferment or thrombin. Thrombin would, therefore, be the only substance which has a direct action upon the fibrinogen, and the tissue coagulins, according to this theory, would act indirectly, namely as producers of the ferment.

19. There are certain objections to be raised against the theory of Alex. Schmidt, even in the modern form given it by Morawitz and Fuld. This theory is mainly based on the fact that a combination of tissue extract and serum acts much stronger than the sum of the component parts would lead one to expect. This increase in strength is, however, not an essential factor. It is absent in the case of invertebrates, and if present can be explained in different ways: (1) An activation of a proferment may take place either in the serum or in the tissue extract. (2) Both substances may attack the fibrinogen independently, each one acting in a different way.

Under this condition they may strengthen each other's action, even if one of these two substances alone would be entirely powerless. (3) Intermediate reactions may take place during the

process of coagulation, and these substances might accelerate such intermediate reactions.

(4) This increase in strength might not at all depend on the action of the active principles which cause the coagulation, but might be produced by another constituent of either serum or tissue extract, by providing favorable conditions for the action of the active agency. We saw, furthermore, that such an increase in strength was found by Alex. Schmidt to take place when he combined thrombin with the zymoplastic substance and under conditions in which the presence of a proferment could be excluded. A similar increase in strength was observed by Bordet and Gengou when they combined the action of inactive with active serum. I have mentioned similar phenomena in the case of inorganic catalyzers. By making use of the fact that tissue coagulins are specific, I could, moreover, show that the increase caused by the combination of serum and tissue extracts depends greatly upon the kind of plasma and fibrinogen on which this combination acts, and that the strength of this acceleration does not primarily depend upon the kinds of serum and tissue extracts used, but on the combination of tissue extract and fibrinogen. This proves that the tissue extracts attack the fibrinogen directly. Muraschew found similar conditions, the significance of which he did, however, not recognize. There are other experimental facts, also favorable to this view, which cannot be discussed here. This explanation would make it, furthermore, easy to understand why the leucocytes of the lymph are able to cause the coagulation of the lymph fibrinogen, although the lymph does not contain blood plates, which, according to Morawitz, are the source of the thrombogen. It would also explain why, after intravenous injection, the tissue extracts cause such a rapid coagulation of the blood. To accomplish this intravascular coagulation the presence of free proferment in the circulating blood would not be necessary, if we assume that the tissue coagulins are able to act directly upon the fibrinogen. It is, therefore, probable that two substances are of importance for the coagulation, the tissue and blood coagulins, both acting independently upon the fibrinogen. It is possible, but not certain, that under certain conditions they act upon each other, thus increasing their strength.

20. Both these substances are derived from cellular elements, the blood coagulins becoming free probably as a result of the changes which certain blood elements undergo on leaving the vessels.

In the foregoing, the term "blood coagulins" was preferred to that of thrombogen, prothrombin or thrombin, as being a very general expression, not indicating the condition in which the substance leaves the blood cells. It is as yet uncertain if this substance is first liberated in the form of a distinct proferment, which, under the influence of certain mechanical or chemical

agencies becomes converted into a chemically different substance, the thrombin, or if a part of the substance leaves the cell already in an active state, although another part might become activated later by different means. It is also uncertain, whether such an activation would consist in the chemical transformation of one substance into another or in some other process. The blood of invertebrates might prove to be a favorable material for further study of these problems.

21. The blood remains liquid inside of the blood vessels because the blood cells suspended in a fluid of the composition of the blood plasma and surrounded by a smooth lining of endothelial cells, undergo no changes leading to the discharge of the blood coagulins. According to Overton lipid substances are very prominent in the composition of the outer part of cells. The intact endothelial cells may, therefore, be supposed to act in a similar but more perfect way upon the blood cells, and directly or indirectly upon the coagulation of the blood, than oil, which prevents the ameboid movements, and the processes of dissolution of the blood cells, and that prevents thus indirectly the coagulation of the blood.

Cells, of course, are probably constantly disintegrating in the blood inside the body. This, however, does not necessarily lead to the setting free of thrombin. We found that in cells undergoing autolysis a marked decrease in the quantity of tissue coagulins can be very readily observed.

We might, therefore, conceive that blood cells which die gradually, have at the time of dissolution become free from active substances, or that in the case they still possess a part of their coagulins, antibodies, whose existence in the blood seems probable, are able to counteract their influence. There is no indication that, as Brücke suggested, the endothelium of the vessels contains a substance inhibiting the coagulation of the blood. Recently Gutschy believed to have proven this hypothesis experimentally. In repeating Gutschy's experiments, I did not, however, find any evidence of the existence of such substances.

22. So far the conditions under which the coagulation of the blood or blood plasma is accelerated or inhibited have mainly been studied outside the animal body. Only little has been done to determine how far the factors accelerating the coagulation outside the body are present inside the organism and how different parts of the body behave in this respect. I found that blood plasma of the goose injected into the peritoneal cavity of different varieties of animals did not coagulate within the time of observation. Morawitz, who confirmed this observation, added the further fact that pepton plasma coagulated rapidly under similar conditions. There is here a new field for investigation, which will probably prove of interest for the pathologist.

NEPHRITIS COMPLICATING MUMPS.

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THAT inflammation of the kidneys may complicate acute infectious parotitis has been recognized, but the cases reported have been very few, and no attempt has ever been made to correlate the observations described. Many of the textbooks on diseases of children do not mention nephritis as a possible complication of mumps, and the others speak of it as a rare condition, of which only a few cases are on record.

The following well-marked case has recently come under the writer's observation and is thought to be of particular interest, in addition to the rarity of the condition, because of the very unusual family predisposition to kidney disease, and also because of the superimposed occurrence of measles during the course of the other affections:

Case.—E. S. G., a sturdy boy of four years. *Previous History:* Has never been ill, except for occasional digestive disturbances. *Family History:* Paternal grandfather died of Bright's disease at the age of fifty years; paternal grandmother died of acute Bright's disease at age of thirty-two years; maternal grandfather died at sixty years from chronic Bright's disease. Father has had an attack of acute inflammation of kidneys, following exposure to cold, lasting two months. Urine now normal. Mother had very severe acute Bright's disease, following operation under ether. Urine now normal. Sister had acute nephritis with scarlet fever. Urine now normal. The one remaining brother, ten years old, has had scarlet fever and measles without kidney lesion.

Present Illness.—January 17, 1904. When first seen, had well marked double parotitis, which had existed one day. No unusual symptoms. Temperature 100° F.; January 22, swelling of parotids continues, no fever for two days; patient allowed up about the room; brother in same house taken ill with measles; January 25, swelling less marked. Patient seems bright, but a little pale. No fever; January 27, anemia much more marked and very striking. Slight puffiness of eyelids. Patient is languid. Temperature 101° F. Inquiry develops that urine has been dark, cloudy and scanty for two days. Patient put to bed on milk diet; January 28, specimen of urine first obtained. It is distinctly "smoky," of greenish color, with considerable amorphous sediment. Acid specific gravity, 1.022; contains five per cent. albumin, no sugar or indican, urea, 1.9 per cent. Numerous large and small granular, and especially pus casts. Very numerous red blood cells and leucocytes. Quantity, 12 ounces in twenty-four hours. Anemia very marked; hemoglobin 45 per cent. Temperature, 100° F. Loud hemic murmur heard over apex and base of heart.

January 30, patient very ill. Temperature 103° F. Swelling of left parotid has disappeared. February 1, condition about same. Urine contains only three per cent. albumin; quantity, 18 ounces. February 2, slight rash of measles over face and neck. Temperature 104° F. Child very ill. Urine same as before. February 3, measles well developed. Temperature 103° F. Urine one per cent. albumin; casts, blood and leucocytes, as before; quantity 23 ounces. February 4, temperature has fallen suddenly to normal. February 5, rash fading; still slight swelling of right parotid. Urine, specific gravity 1.020 with faint trace of albumin. Many hyaline, granular and pus casts; few leucocytes; no red cells. February 8, rash has disappeared; no albumin in urine, but casts persist. Swelling of right parotid has disappeared. Patient still anemic; hemoglobin, 50 per cent. February 19, patient entirely convalescent; no albumin or casts in urine; hemoglobin, 65 per cent. Eleven months later. Child still entirely well, and urine is normal.

Summary.—A case of acute exudative nephritis in the course of mild double parotitis, in a boy four years old, with a marked family predisposition to kidney disease, occurring in the twelfth day of the parotitis, which was further complicated on the eighteenth day by a moderately severe attack of measles. The measles exercised no influence upon the nephritis, which entirely disappeared in thirty-five days, and after several months had not recurred.

A careful review of the literature has revealed reports of 29 similar cases. In addition to these, several observers mention the occurrence of febrile albuminuria during mumps as not infrequent. Catrin, in particular, examined the urine carefully in a series of 130 cases. In 91 cases the examinations were made only in the presence of some clinical indication or complication. Albuminuria was found in 6½ per cent. of these cases. In 39 cases the urine was examined as a routine. Albuminuria was found in 30 per cent. of these cases.

These results indicate the frequent occurrence, in mumps, of albuminuria due to acute renal congestion or degeneration, commonly designated "febrile albuminuria," and of no great significance. The series of cases here collected, however, includes only those in which there was evidently actual inflammation of the kidneys.

SUMMARY OF 30 CASES.

Age is mentioned in 17 cases: Under seven years in eight cases; over sixteen years in seven cases; twelve years in two cases; youngest, four years; oldest, twenty-four years.

Sex is mentioned in 16 cases: Male, twelve cases; female, four cases.

Family history: Very marked predisposition to nephritis in writer's case.

Previous history: Mentioned in four cases, all negative.

No.	Reported by	Age	Sex	Family History	Previous History	Character of Parotitis	Time of Onset	Symptoms	Urine	Duration	Other complications	Result	Remarks
1	Pratolongo.					Double.	After subsidence of parotitis.	Anasarca; dyspnea, and fever.					In 1782. Letter to Borsieri.
2	Burne.	12	M.			Double.	Four days after subsidence.	Violent convulsions; coma; suppression urine.	Very scanty; pale; smoky greenish; much albumin.	Five days.		Recovery	
3	Renard.						Two or three days after parotitis cured.	Edema of face and feet.	Considerable albumin.	Three weeks.		Recovery	
5	Colin.	24	M.		Negative.	Left.	Second day of parotitis.	General anasarca; headache; albuminuric retinitis; dyspnea; convulsions; coma; death.	300 c.c. in 24 hours. Urea, 1.9%. Albumin, 2.2%.	Twenty-four days.	Orchitis. Double.	Death.	Autopsy. Large white kidney. Acute exudative nephritis, with considerable connective tissue mostly confined to cortical zone.
7	Beale.	19	M.			Double.	Five days after subsidence of parotitis.	Marked headache; pain in back.	Trace albumin.	Five days.	Orchitis. Double.	Recovery	
8	Eichhorst.	7	M.					Acute hemorrhagic nephritis.	Blood; albumin.	Eight mos.		Chronic nephritis	Typical picture of secondary contracted kidney.
9	Isham.	4	F.			Double.	Second day of parotitis.	Albuminuria; after exposure, high fever; delirium; dyspnea; excited heart action.	Much albumin; blood casts.	Not sure. Some time.	Pericarditis.	Recovery	
10	Sorel.	24	M.			Double.	Five days after subsidence.	Fever; delirium; slight motor aphasia.	Albumin; bloody mucus.	Few days.	Orchitis. Right.	Aphasia for some time. Recovery.	
11	Croner.	6	M.			Double.	Tenth day.	Malaise; edema eyelids, feet and hands; ascites.	Scanty; bloody; large amount albumin.	Six weeks.	Acute cervical lymphadenitis.	Recovery.	
12	Karth.	24	M.			Hyper-toxic.	With onset of parotitis.	Headache; sleeplessness; edema eyes; high fever.	Much albumin.	Two weeks two days longer than parotitis.		Recovery.	Like diphtheria or scarlet in severity.
13 to 14	Demme.	7	F.				During subsidence of parotitis.	Like scarlet nephritis.	Glomerulonephritis.	Short.		Recovery.	Observation in 117 cases.
15	Mettenheimer.					Left.	With parotitis.	Much albumin.	Much albumin.	Four days.		Recovery.	
16 to 18	Gag.						Sixth to seventh day of parotitis.	Fever; albuminuria.	Albumin.	Very transient.		Recovery.	Large number cases investigated for this purpose especially.
19	Bezy.					None.	During epidemic.	Delirium; no edema.	Scanty; smoky much albumin.	Few days.		Recovery.	Quoted as possibly case of mump nephritis, without parotid involvement as is sometimes case in orchitis. Comby admits possibility.
20	Catrin.						Eighteen days after cure.	Edema of eyelids; headache; vertigo.	Much albumin.			Recovery.	130 cases. 91 cases examined if any indications—64% albuminuria. 39 cases all examined—30% albuminuria.
21	Toussaint.	Adult	M.		Neg.	Double.	Fifth day.	Violent convulsions; coma; albuminuria; scanty Urine.	Much albumin.	Two days.	Orchitis. Right.	Recovery.	
22	Henoch.	6	F.			Double.	One week after subsidence of parotitis.	Albuminuria.	Blood and albumin; epithelial cells; no casts.	One week.		Recovery.	
23	Henoch.	5					Tenth day.		Blood and albumin.			Recovery.	
24	Geschist-er.						After parotitis.		Blood and albumin.			Recovery.	
25	(Henoch.)												Also had whooping-cough at time.

No.	Reported by	Age.	Sex.	Family History.	Previous History.	Character of Parotitis.	Time of Onset.	Symptoms.	Urine.	Duration.	Other complications.	Result. Recovery.	Remarks.
26	Kerley.	4	M.			Double. Moderately severe.	Eighth day.	Anemia; edema of eyelids; suppression; fever.	Almost solid with albumin; blood; hyaline and granular casts.	Six days.			Anemia for some time.
27	Granier.	16	F.	Neg.	Neg.	Mild.	Six weeks after parotitis.	Edema of legs.	Albumin.	Developed into chronic.		Relapsed after apparent cure and died.	Went out in cold and wet a few days after mumps appeared.
28	Granier.	12	M.			Mild.	Several days after.	Anemia; malaise; edema feet and eyelids; convulsions; coma.	Much albumin.	Considerable time.		Recovery.	Exposed to wet in snow early few days of mumps.
29	Sylvester.	17	M.			Double.	Third day.	Delirium; convulsions; headache; fever; suppression; tenderness over kidneys.	Slight albumin.	Nine days.	Orchitis. Left.	Recovery.	
30	Miller.	4	M.	Nephritis in three grand-parents, both parents, one sister.		Double.	Twelfth day.	Anemia; puffiness of eyelids; fever; scanty urine.	Smoky; scanty; 5% albumin; casts; blood and pus.	Twenty-three days.	Measles.	Recovery.	Anemia persisted for some time.

Character of parotitis: Mentioned in sixteen cases; double in fifteen cases; mild or moderately severe in fifteen cases; very severe in one case.

Relation of onset to parotitis: Mentioned in twenty-nine cases. During course of parotitis in thirteen cases; first to third day, five cases; fifth to eleventh day, eight cases.

After subsidence of parotitis, sixteen cases; first week after, fourteen cases; eighteenth day after, one case; six weeks after, one case.

Symptoms: Those of acute nephritis in all grades of severity.

Other complications: Orchitis in five cases.

Duration given in 23 cases. One week, or less, thirteen cases; from one to two weeks, two cases; two to six weeks, six cases; developed into chronic, two cases. Result, permanent recovery, 25 cases; developed into chronic nephritis, two cases; died, one case.

Pathology: Autopsy in only fatal case showed large white kidney, with changes of an acute nephritis, with increased connective tissue.

Conclusions.—1. Acute nephritis complicating mumps may occur in either children or adults, and is much more frequent in males than in females.

2. The parotitis is usually double, mild in character, and the nephritis is more liable to occur during early convalescence. Exposure to cold may be a predisposing factor.

3. The nephritis is usually moderately severe, of less than one week's duration, and ending in complete recovery. Rarely it may develop into chronic nephritis, or it may be so severe as to cause death.

4. This complication of mumps is infrequent, but probably not as rare as usually considered. Febrile albuminuria is probably very common

in mumps, but this, as well as more serious kidney lesions, is probably often overlooked.

5. Careful urine examinations should be made, and strict precautions against exposure should be taken, in all cases of mumps, both during the acute symptoms and during convalescence.

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THE STATUS OF SUPRARENAL THERAPY.¹

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So much has been written and spoken of in relation to the uses of the suprarenal that one knows not where to begin. The history of suprarenal therapy has been amply covered by different observers, and it is needless for me to do more than simply mention the fact. As my time is limited I hope you will bear with me when I pass rapidly over most of the parts and give but a synopsis of each portion.

Suprarenal is not a new drug. It is an old one but owing to an inert preparation, the use of the

¹ Read before the Ninety-ninth Annual Meeting of the New York State Medical Society, at Albany, January 31, February 1 and 2, 1905.

drug was discontinued and fell into oblivion until 1892, when Dr. W. H. Bates, of New York, revived it. Some few years after this Dr. Bates had much trouble in enlisting medical men to experiment with the remedy and note its relative value as a therapeutic agent in the different diseases. At times he said he was most discouraged and despaired of ever getting one to use the drug. By his persistent efforts he has now succeeded in putting to work the whole civilized world. So wonderful are the properties and uses of this drug that in but an exceedingly short time it has become one of the most widely known and most important in use. Upon hundreds of thousands of cases has the drug been administered internally or applied locally. It is a strange coincidence that in the immense amount of literature, commercial or otherwise, papers and lectures that have been published within the past two years, there has not been mentioned once the name of that indefatigable and painstaking worker, Dr. W. H. Bates, of New York, through whose untiring efforts, unassisted except by repeated antagonistic remarks and stumbling blocks placed in his road, all the civilized nations have become acquainted with so wonderful, invaluable and now indispensable a remedy.

I am convinced that the revival of this valuable drug is one of the greatest achievements of the past fifteen years. It would please me to cite the good work of the many ardent workers on this drug, but it would take up too much time and space. Suffice it to say that it has been conclusively proven by different observers in different parts of the world that the suprarenal extract and its active principle are not only of benefit but also of undoubted great value as an addition to our therapeutic armamentarium. Over three years ago I sent out over eight hundred communication to all parts of the civilized world requesting reports, favorable or unfavorable, from the internal administration of the suprarenal. I received but eight replies stating that my letter was duly received and that it would shortly be published. Up to this late day I have not received personally from this source, one report of a case treated with the drug.

In the *New York Medical Journal* for October 6, 1900, I published my first paper entitled "The Use of the Suprarenal in Organic Diseases of the Heart—a Preliminary Report." In the same journal, in 1901, I published an exhaustive report on its use in organic heart disease. In the *MEDICAL NEWS* for January 4, 1902, I published forty-five cases of hemorrhages from various causes treated with the suprarenal. In the *New York Medical Record* for November 17, 1900, I published a report on the use of the suprarenal in diseases of the lower air passages.

Preparations.—We have the dried and powdered suprarenal substance which is designated as suprarenal extract. We also have the alkaloid, better termed the active principle, which is called adrenalin. Solutions of the suprarenal extract

do not keep, but solutions of adrenalin chloride keep indefinitely, are reliable, and are non-irritating. Whenever in the future I speak of only suprarenal, as such, I also mean adrenalin chloride.

Administration.—The powder is administered internally in three-grain doses either as a powder or better in capsule form. The active principle is administered internally in the form of a solution, the strength of which is 1/10,000 to 1/1,000, in doses of from five to fifteen drops. To get the best results it should be administered frequently—from one to three hours or oftener as the case may require. The solution is dropped on or beneath the tongue for very rapid effects, or it can be swallowed. Some now advocate to use it hypodermatically and by electrolysis. As to the hypodermatic use of the drug I believe it is unnecessary and I have never been in favor of its use. If an adrenalin preparation is at hand, a few drops can be rapidly placed on or under the tongue and its action will become apparent in about the time it takes to get a hypodermatic syringe ready for action. An effect was produced within twenty seconds when adrenalin chloride was dropped under the tongue. Most all of you know that when you are in a great hurry, the syringe often fails to work properly and much valuable time is lost. I have read in literature that the hypodermatic administration of the solution (otherwise called the subcutaneous injection) had been given in collapse and the site of the injection was often very painful and that this form of administration was dangerous. Solutions in the strength of 1/10,000 have been known to cause great irritation while stronger solutions have given rise to gangrene and subsequent sloughing. Some state that they have used it hypodermically without any deleterious results. Those who have not advised subcutaneous administration advise intravenous injection, but they also state that when adrenalin solution is given by mouth, very rapid and beneficial effects are obtained with no danger whatever to keep the physician on his guard when he so administers it. Why then, if we get very rapid results (often within twenty seconds), when it is given by mouth without the least danger to cause us any anxiety, should one use the hypodermatic or intravenous method with such dangers as are above portrayed?

Surgically it is applied locally to the mucous membrane of the eye, ear, nose, throat, urethra, bladder, etc., in a strength of 1/5,000 to 1/30,000, with or without the addition of other remedies as the case may indicate. Some drugs destroy the active properties of the active principle in solution. Those most often employed, and which do not materially affect its valuable and powerful properties are cocaine, boric acid and normal salt solution. Cyanide and bichloride of mercury, zinc sulphate, pilocarpin, hydrochlorate and many others have been used in the same solution, but I believe it is better to restrict, up to the

present time, the addition to the three previous mentioned.

Contra-indications.—It has none.

Diseases Treated.—The diseases in which the suprarenal was administered by me and the results published were in all forms of organic heart disease, tracheitis, acute and chronic bronchitis, bronchial asthma, congestion and edema of the lungs, pneumonia, hemoptysis, pulmonary tuberculosis, hemorrhage from the uterus from various causes, such as complete and incomplete abortions, benign and malignant tumors, post partum hemorrhage, metrorrhagia, menorrhagia, atonic conditions and at the menopause. I have also employed it in hematemesis, hematuria, in threatened attack of apoplexy and in apoplectic seizures. The suprarenal, and more lately, the adrenalin chloride solution has been used by many observers both medicinally and surgically in diseases of the eye, ear, nose, throat, larynx, in genito-urinary work, including the kidneys, in scarlatinal angina, asphyxia neonatorum, anesthetic collapse, angioneurotic edema, edema of the glottis, hemorrhoids, hemorrhagic fecal fistula, gastro-intestinal hemorrhage, goiter, gonorrhea, lupus, morphine and carbolic acid poisoning, ulcer of the stomach, for lost voice and for diagnostic purposes. To simmer it down, the suprarenal extract and its principle are of value in organic heart disease, for performing bloodless operations, in most of the diseases ending in itis, as an astringent and as a hemostatic in hemorrhages generally.

Heart.—The suprarenal is one of the most valuable of remedies in organic heart disease. When other drugs, including strychnine and digitalis have failed to be of any benefit, the solution of adrenalin chloride has given marked beneficial results. A detailed account of its action can be found in one of my published papers. Adrenalin chloride has been used in pneumonia as a heart stimulant to tide the patient over a critical period.

Lungs.—The suprarenal has often been of great assistance in relieving the symptoms of a stubborn laryngitis tracheitis and bronchitis when many drugs failed to benefit. In congestion and edema and bronchial asthma the administration of the suprarenal has helped to tide the patient over a critical period and often was the only remedy administered. In pneumonia it was given for its stimulating effects on the heart and for hemorrhages whenever the latter were present. In pulmonary tuberculosis it was administered chiefly to lessen the severity of the cough, to decrease the quantity of the expectoration, to clear the throat, to strengthen the heart and to tone up the patient generally. In hemoptysis from whatever cause, the administration of the remedy gave rapid evidence of its powerful yet harmless effects.

Hemorrhages.—As a hemostatic the suprarenal preparations have no equal. They do the work when all other measures fail to benefit.

In hemorrhages from almost any portion of the body, the internal administration of the drug was almost always followed by beneficial results. Some few cases were not benefited by the suprarenal powder, but on administering the solution of adrenalin, these cases were benefited. Surgical, traumatic or so-called idiopathic hemorrhages, unless they are from large blood-vessels are almost always instantly checked by the local application of the drug. So powerful and so rapid are the properties of this greatly lauded remedy that with its help we are enabled to operate, should an operation be indicated, upon those poor, unfortunate individuals, the bleeders, without that dreaded danger of repeated severe and in many cases uncontrollable hemorrhages. Secondary hemorrhages, at first so often reported and dreaded, after the use of the solution of adrenalin chloride, I believe need not cause any further anxiety. Generally speaking they are not any more frequent than before the drug was employed.

Apoplexy.—The timely internal administration of adrenalin chloride had to my mind prevented a number of attacks of true apoplexy. I can now recall the histories of six cases in which the symptoms were such as indicated that an attack of apoplexy was imminent. Adrenalin chloride solution was administered and the threatening symptoms rapidly passed away. All danger of an attack of apoplexy was apparently avoided. Some few weeks to months afterward, I was informed by one of the family that the same patient was later very suddenly taken ill with exactly the same symptoms and the family called in another physician who administered a much different medicine. The result was that the patient died within a short time. Adrenalin might and might not have saved these patients during their last attack, but I have had patients with more than one attack who were markedly benefited by the administration of adrenalin chloride.

Uterus.—Hemorrhages from various causes, such as menorrhagia, metrorrhagia, at the menopause, malignant and benign growths, atonicity, complete and incomplete abortions, post-partum hemorrhage, idiopathic (so-called) hemorrhages and also from persistent oozing after curetting. Dr. Geo. Tucker Harrison, in a paper before the New York County Medical Association said, "Why should we endanger the life of a woman from infection, who is suffering from uterine hemorrhage by the local application of suprarenal extract to the interior of the uterus, when it acts almost as rapidly and as powerfully when administered by mouth without the slightest danger of causing infection?" Adrenalin chloride has been used to diminish the size of an enlarged uterus.

Stomach and Intestines.—Hematemesis from all causes has been rapidly checked by the internal administration of the suprarenal powder. A few cases failed to be benefited by the powder

but on administering the adrenalin chloride solution immediate and permanent relief was afforded. In hemorrhage from the intestines from all causes, from fecal fistula, hemorrhoids and ulcers of the rectum, it has given good results. It has also been reported to have been administered in cases of appendicitis, but I am not aware of the ultimate results.

Eye.—The use of adrenalin chloride has given wonderful results in diseases of the eye. The value of the remedy in diseases of the eye is as a hemostatic and astringent in acute and chronic conjunctivitis, keratitis, choroiditis and almost all the other diseases that end in it; in gonorrheal ophthalmia, glaucoma, in inflammation of the appendages. Cancer of the lid has been reported to have been cured by its use. As a surgical aid it has given most remarkable service as a hemostatic, controlling hemorrhage except from large blood vessels, thus enabling the operator to proceed with much more rapidity in his work, with greater precision and also, of no less importance, saving the patient's sanguine fluid, which is quite essential in many of the patients operated upon, especially those operated upon in the nose. With the aid of this drug an operator on the eye, ear, nose, throat and for the usual minor surgical work, can be rightly called "bloodless surgeon;" and with the addition of cocaine to his armamentarium, we can add the "painless surgeon."

Ear.—Adrenalin chloride is chiefly used as an astringent in congestion of the auditory canal, the membrana tympani, in the Eustachian tube and in inflammations generally in the middle ear. It is also used to check hemorrhages from traumatism and to prevent hemorrhages during surgical operations. Polypi have been considerably reduced in size from the constant application of the drug. It is also used for severe congestion of ear, to make the tube permeable and by permitting free drainage to give relief to the patient. It has also relieved tinnitus aurium with success when all other remedies had failed.

Nose.—The local application of adrenalin chloride has given marked benefit and when all other remedies had failed to give relief, it has worked wonders. Medicinally it has been employed in hay fever, otherwise called hay asthma, atrophic and hypertrophic rhinitis, edema and congestion. Surgically it acts as the most powerful hemostatic in hemorrhages from small blood vessels from various causes. It is most extensively employed in performing bloodless operations on the nose and for the same reasons as in the eye. Continuous applications have caused a decrease in size of polypi. Reports from medical men who do special work on the nose and throat, have noted secondary hemorrhages from its use, after operations, but I believe that the hemorrhages have not been more frequent than before the drug was employed.

Throat.—The suprarenal is mostly employed

as a hemostatic whether the etiological factor has been external violence or is going to be a surgical procedure. In catarrhal conditions it is used as a vascular astringent of great value.

Genito-Urinary.—In hematuria either from the bladder, kidneys, or urethra the use of adrenalin chloride administered internally or applied locally as a hemostatic has been followed by prompt beneficial effects. In strictures, when the passage of sounds was almost impossible, the installation of adrenalin chloride enabled the passage of the instruments, and even larger sized ones with comparative ease. It has been employed to reduce extensive congestion of the prostate.

Operations Generally.—It has been extensively employed in operations generally as a hemostatic of exceedingly great value, especially in conjunction with cocaine, chiefly for the purpose of preventing hemorrhage. Operators have used the adrenalin chloride in operations upon the eye, ear, nose, throat, larynx, rectum, genito-urinary, nevi, benign and malignant tumors and whenever oozing and moderate hemorrhages are to be prevented. It thereby enables one to do clean work which previously was extremely bloody and gave a grave aspect to the case. It also enables the operator to inspect his field of operation without hindrance from intruding hemorrhage.

Chloroform Syncope.—Collapse and Shock.—Adrenalin chloride has been administered with good and rapid results. Given before chloroform anesthesia it acts as a preventive to cardiac syncope. Administered in drop doses of 1/1,000 solution into the mouth during the course of the chloroform anesthesia it obviates all danger of unforeseen cardiac weakness or embarrassment. You are to understand that chloroform cannot be used indiscriminately, the signs and symptoms of shock neglected while adrenalin is being administered. Adrenalin chloride will act wonderfully in a failing heart and respiration when there is evidence of weakness, but when there is neglect and indiscriminate use of so powerful a drug as chloroform with so depressant actions seldom is anything of avail. Care in anesthesia must be the watchword first and always. I hope I make this plain to you all.

Purpura Hemorrhagica.—Adrenalin chloride has been of benefit in this disease. When the drug was administered internally further progress of the disease was rapidly checked and convalescence was rapidly established.

In conclusion, I wish to say that we may well be surprised when we reflect but a moment that with so powerful a remedy at our command and so extensively employed, no case of poisoning or great anxiety has ever been observed when it had been properly employed and in conservative dosage.

310 East Fifty-first Street.

THE "SPECIFIC THERAPY OF TUBERCULOSIS."¹

BY CHARLES DENISON, A.M., M.D.,
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THIS splendid address of the distinguished Italian physician is an incentive to discussion.—However it is one which I hesitate to take up, with my limited knowledge of the subject. That limitation is my excuse for intruding. It suggests queries which I should very much like some experimentalist or laboratory expert to answer, if he will kindly do so. Though the subject seems to be purposely worked out on the *serum-therapy* side, as against what I shall term the *direct toxin* side, there is much in Maragliano's experimentations and conclusions which agrees with and strengthens our beliefs as to the specific treatment of tuberculosis.

There is one important question suggested which needs to be settled; that is, Has the *indirect* serum method an advantage over the *direct* toxin method? Is not the latter method preferable, when properly selected and refined in technic, both as to quality and dosage? In other words, admitting the high development of both antitoxic and bactericidal elements which Maragliano claims in an animal serum, transference to a tuberculous infected body preferable in ultimate results to properly exciting this antitoxic power in the animal or man treated?

As an exposition of the *serum* side of the tuberculosis treatment question, this paper is both the strongest and most authoritative I have any knowledge of. And yet we have to admit, throughout the whole of it, either an intentional or inadvertent ignoring of the work and views of those who would take the negative side of the above question.

For instance, much is made of the effects of the "toxins" of young cultures of bacilli to quote "the inflammatory and destructive action on the tissues with which they come in contrast, due to the 'necrotic acid' of De Schweinitz and Dorset," and he adds, "these poisons injected beneath the skin, they cause inflammation with purulent fibrinous exudation and bring about necrosis of the tissues," etc.

What is this "necrotic acid" and what quantities of the extracted poisons does he refer to as producing the inflammatory and necrotic effects?

Of course, everything depends on the size of the dose. Virchow found, post mortem, these necrotic results of reckless experimentation, and Koch himself (through insufficient limitation as to size of dosage) may have been largely to blame for many failures through similar effects. But it is manifestly unfair to present these gross results of massive doses as representative of the *direct* method of specific medication in tuberculosis.

Second, what will you say of Maragliano's claim of a "double series of poisons—the bacilli

and the accompanying proteins?" Is it to be inferred that he claims such a mixed toxin is always used in the direct method? On the contrary, does not success come through the singleness and purity of the toxin used?

Third, is it true that the theory of "mixed infection" was first proclaimed by Prof. Maragliano? If so, certainly great credit is due him; for this period in the course of active tuberculosis is the most critical one in its history.

Fourth, several paragraphs have relation to the same question to which I wish to call particular attention. Maragliano says "The richest in antitoxic materials is the serum of a healthy man." Again, "the triple power of the blood serum, bactericidal, antitoxic and agglutinating, increases considerably if a healthy animal is injected with tuberculous matter." Again, speaking of the ordinary and extraordinary means of defense which the healthy animal organism possesses, he says, "The extraordinary means are also antitoxic and bactericidal and develop principally in the presence of tubercle bacilli that penetrate the tissues."

In view of such remarkable statements, the truth of which is not questioned, I want to ask where is the warrant for expecting any better effect from the antitoxin previously developed in another animal over and above that slowly created in a given diseased organism?

Maragliano says, referring to the materials of defense created by the inoculation of healthy animals with tuberculous matter, "From this was born, by a logical association of ideas, the suggestion of antituberculous serum-therapy." Was it not rather a birth of *hope* that the same curative result could be worked out of an antituberculous serum as that so brilliantly obtained from an antidiphtheric serum? Is not this expectation simply a theoretical assumption, since the two diseases, tuberculosis and diphtheria, are so dissimilar?

When the American Medical Association met in Baltimore, in 1895, and Dr. Paul Paquin brought three tuberculous patients from St. Louis to illustrate the curative results of his antituberculous horse serum, I invited him and Dr. Karl von Ruck to come over to my hotel, where we could quietly examine these patients with the stethoscope. Dr. von Ruck and I concluded, after a careful study of these cases, that we were unable to detect any evidence of other effect than the *transmission of tuberculin* through the horse's blood.

Afterward I experimented somewhat on my own account. I had a puppy injected every twelve hours with 2½ c.c. crude tuberculin (Koch's) and then, twelve hours after a total of 10 c.c. had been given, the little animal was killed and his blood, brain and glands made into a serum (?). On experimenting with this product it took me only a little while to see that I was getting a double (perhaps fermenting) effect and to abandon its use.

¹ Anent Prof. E. Maragliano's lecture, delivered before the Henry Phipps Institute, in Philadelphia, March 28, 1904. See *Medical News*, April 2, 1904.)

Then, again, after trying antituberculous asses' serum with only fair success, Fish's antituberculous horse serum was brought out with great expectations for its curative power. We understood that this serum was being crowded full of supposed antitoxic energy by increasing toxic doses injected into horses. I faithfully tried the advancing dosage, expected to confer immunity, and, on close observation of effects, determined to my own satisfaction that there was a cumulative process set up in patients treated. I suspected that this was due either to the excessive dosage of tuberculous toxin given the horses, or to obtaining the serum too soon afterward, or to some unsolved mystery which ought to discredit the plan.

Ever since that time I have not wanted in my therapy, any asses', goat's or horse's serum, with their uncertain constituents, unstable measures, and with their rash-producing effects, showing that there are present other ingredients than the antitoxin we are after! This objection holds, even if we admit that there is included a given quantity of antitoxin raised to a high degree of potency. Supposing it is there, the question is, does it excite in the injected invalid's organism a greater amount of defense, than the original toxin would if properly given?

The question is almost answered by the essayist himself when he explains that "this immunization is not wholly passive. It arises without doubt in the animal organism through the energies of the organism itself. The antibodies and the antitoxins exist in the blood of animals thus injected in much larger quantities than was injected." And again, in his finding "an increase of defensive substances in the blood of injected animals greater than the geometrical proportion" he is convinced "that the participation of the organism is necessary to this increase because it did not take place in subjects that were very sick." Now, if we are to take Prof. Maragliano's dictum, that it is the injected organism itself that creates its own antibodies and antitoxins, what more do we want, except to know the minimum dosage, to which that organism is sufficiently susceptible, in order to create these defensive substances? If, as is true, we need diluents to get down to a safe and proper dosage, for the most favorable influence upon that particular organism, are there not liquids more antiseptic, germicidal and leucocyte producing, and at the same time more stable and certain in strength than any blood serum of any other animal?

It is "up to" the manufacturers of these indirect antituberculous sera to bring forward their proofs; for the refined tuberculin preparations (all of the culture fluid and everything possible except the toxins from the germ spores being excluded), are capable, under suitable conditions and technic, of accomplishing just what the best of those sera will do toward producing "new antitoxins or new antibodies."

Possibly some roundabout way, via-the-serum route, may suit cases unfit for the direct method. But, generally speaking, if resistance to tuberculosis is nil because of the destructive processes which have already culminated, and because the organism, what is left of it, is already super-saturated with toxin, it is useless to try anything on these specific lines.

But for curable or arrestible cases, Prof. Maragliano's conclusion applies as well to the direct (extract) as to the indirect (serum) method. He says, "For the rest, serum-therapy does nothing more than reproduce the process followed by nature in spontaneous cure, adding its good effects to those of hygiene."

Fifth. Even if time remained for the purpose, I do not know that I should want to take much of it in considering Prof. Maragliano's scheme for the "vaccination" of healthy persons to immunize them against tuberculosis. *Cui bono?* If a person does not have to have a disease why should he be vaccinated against it?

From my own conception of the nature of tuberculosis¹ we do not individually have to have it and it is sufficient to start in to fight it, or ought to be, when we get it. Why burden the organism with seeking an artificial immunity before the natural immunity, the gift of every one in health, is lost? I should as soon think of vaccinating against syphilis as against tuberculosis. But tuberculosis is vastly different in necessitating a peculiar susceptibility to it, which prerequisite is absent in the other infection.

This susceptibility being an essential part, we should perhaps look at tuberculosis as a thing of degree—a dyscrasia or entity which has consumed, say 10 to 20 per cent. of its course before that form of vegetable decay, the fungus-growing germ—the tubercle bacillus—reputed as the cause of the disease, has come into existence. The line of demarkation between such dyscrasia and actual infection is at least not a definite one. By the crude tuberculin test I have proved latent tuberculosis to exist in 47 out of 53 cases in which there was either no sputum to examine or only glandular and other suspicions of infection.

Let us say there has been an advance possibly of 20 to 40 per cent. more of the course of the disease by the time the "mixed infection" period determines a still further stage in this process of decay. What is going on is a constant battle between susceptibility and resistance to this toxic influence. If we were able to determine the faults of our civilization, which cause this susceptibility, we could better understand the character of this conflict; for then we would comprehend that this disease tuberculosis is but a natural harvest from such degenerate soil.

If we do not take our punishment for our unhygienic living in one form of degeneration we

¹ See, "Devitalized Air—Toxemia, a Prime Cause of Tuberculosis," read at the London Tuberculosis Congress, 1901. Nov. 9 and 16, 1901, N. Y. Medical Journal.

will have to take it in another. There must be some place where exhausted nature may lie down to die! It is my prediction that as we approach the eradication of tuberculosis, as some think we are doing, the mortality from associated degenerative processes, as from Bright's disease and cancer, will proportionately increase.

Since writing this paper my attention has been called to the following pertinent data gleaned from the report of the Northwestern Mutual Life Insurance Company: "Percentage of deaths from tuberculosis, from 1857 to 1897, 15.62; same from 1897 to 1904, 10.67. Percentage of deaths from nephritis, from 1857 to 1897, 4.89; from 1897 to 1904, 7.90. Diabetes from 1857 to 1897, 1.11; from 1897 to 1904, 2.08. There has been a slight decrease in pneumonia and a slight increase in cancer and diseases of the heart."

INTESTINAL ILEUS WITH STRANGULATION.

BY R. R. HUGGINS, M.D.,
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IN spite of the fact that the symptoms and pathology of acute intestinal obstruction are so often discussed and brought before the profession, it is very evident, especially to one doing abdominal surgery, that many patients die every year because of delayed diagnosis, and as a result of this, late operative treatment. Every surgeon must be impressed by the large number of these cases which come under his care when the time for satisfactory operative measures has passed, and in spite of palliative treatment they either die or become subjected to prolonged and tedious convalescence. There is nothing in surgery which gives an operator as much comfort and satisfaction as the result which follows the release of a piece of imprisoned bowel beneath a band of adhesions, the untwisting of a volvulus, or reduction of a hernia before strangulation, which are mechanical conditions, and without operative treatment mean certain strangulation of the bowel followed by peritonitis and death. Unfortunately, many of these cases are not seen early enough by the surgeon to realize this very happy and satisfactory result. Why is this true? I cannot believe it is because they are unrecognized or unsuspected by the average practitioner but rather that they do not adopt operative measures until they have exhausted all other means of relief. While this delay is sometimes advisable, the danger in so doing is very great because in these cases every hour of procrastination means a lessening in the prospect of recovery for the patient. If the symptoms are those of strangulation an exploratory laparotomy is much less dangerous than the expectant treatment.

Symptoms.—The symptoms of this condition as a rule are fairly typical. A patient previously well is suddenly seized with a pain in the abdomen which is more or less severe; oftentimes there is severe shock accompanying the onset of pain, this shock and collapse is said by Reichel to be due to the escape of bacteria and other

products into the peritoneal cavity, these substances when resorbed produce the symptoms of collapse. Early nausea and continuous vomiting are the most characteristic symptoms, especially when preceded by pain and accompanied by obstipation, first the contents of the stomach are expelled, then biliary, and finally fecal vomiting ensues; neither gas nor feces are expelled from the rectum. In some cases if the abdominal wall is very thin the loop of bowel which is strangulated will be so greatly distended that it may be outlined by palpation, or it may be felt within the abdomen, upon rectal examination or sometimes a distended intestine may be apparent on the surface of the abdomen. There is the anxious face and a pulse increasing in frequency. These are the symptoms in the early stage; later, of course, there is paralysis of the intestines and general abdominal distention. The length of time until this occurs depends upon the degree of strangulation; if it be complete, gangrene may ensue in twenty-four hours or even sooner. If we can rule out acute appendicitis our diagnosis is usually certain, and I hold that an early laparotomy is to be advised in every suspicious case, because the danger in this is less than in the expectant treatment. I would also mention the necessity of careful examination for hernia in these cases.

I report four cases to show the marked contrast in the result between early and delayed operative treatment.

Case I.—Mrs. C., aged twenty-eight years. Seen in consultation with Dr. Anderson. Previous health good. Pregnant four months. Was seized suddenly with pain in abdomen referred to epigastric region, after a few hours localized to the lower right quadrant. I saw the case thirty-six hours after the beginning of attack; she complained of severe pain in region of the appendix, vomiting continuously, temperature about 100° F., pulse 110; on local examination extreme tenderness over the appendix and some rigidity of right rectus muscle. I could feel on palpation a distended loop of intestine in upper right quadrant of abdomen, bowels had not been moved. Made a diagnosis of appendicitis together with acute intestinal obstruction. The diagnosis of obstruction was based upon the continuous vomiting and distended loop of intestine. As we seldom see cases of simple acute appendicitis with such persistent vomiting, for so long a period, I concluded that an obstruction of the bowel had also occurred. The patient was removed to St. Francis Hospital, and the abdomen opened forty hours after the beginning of the attack; found the appendix in the state of acute inflammation, as yet unruptured, but contained about one-half dram of pus. The ileum was strangulated about 20 inches from the cecum, due to its imprisonment beneath a peritoneal band, probably the result of a former attack of peritonitis. The band was severed and the intestine freed; fortunately gangrene had not

yet set in and after the application of hot saline solution for several minutes the circulation was restored. In a few hours more a resection of the bowel would have been necessary, thus producing a very serious if not fatal complication. The patient left the hospital in three weeks, fully recovered, and was delivered of a living child five months later.

Case II.—This patient was seen in consultation with Dr. McIntosh. Child of ten months. Patient had been vomiting continuously for thirty-six hours. Cried without ceasing from the beginning of attack. No bowel movement after colon was evacuated, abdomen somewhat distended, temperature normal, pulse rapid. On examination could not outline any tumor through abdominal wall. Introducing finger into rectum I could feel a distended loop of bowel forced into the pelvic cavity. No blood had been discharged from the rectum. Diagnosis: Obstruction of the bowel from intussusception or a volvulus. Patient removed to St. Francis Hospital and operated upon thirty-eight hours after beginning of attack. Found a volvulus of the ileum, intestine very much discolored; in a few hours it would have been gangrenous. The twist seemed to be due to a long mesentery. Patient made a rapid recovery and left hospital in ten days.

In contrast to these I report two cases treated upon the expectant plan:

Case III.—Mr. R., aged forty-two years, was seen in consultation with Dr. McCullough, of Freeport, five days after beginning of attack. Abdomen enormously distended, pulse rapid and weak; vomiting continuous. No bowel movement since beginning of symptoms. Condition seemed hopeless; however, under local anesthesia, an opening was made into the bowel relieving the distention and freeing it from gas. Condition of the patient would not bear exploration sufficient to ascertain the cause of the obstruction. The bowel was stitched into the abdominal wound. Death ensued in eighteen hours. No autopsy.

From the severe pain and collapse, this was probably a volvulus.

Case IV.—Mr. G. Brought into the hospital six days after the beginning of symptoms. Abdomen distended to fullest extent. Vomiting and hiccough. General peritonitis. Peristalsis absent. No gas or feces had passed from bowel. Enterostomy. Lived four days. Autopsy. Old adhesions throughout abdomen as result of former peritonitis. Transverse colon bound down and strangulated by adhesions. Appendix 10 inches in length but not seat of acute disease, had probably caused former peritonitis.

Many cases similar to III and IV constantly occur in every community and could nearly always be saved by early operation.

The results of the above cases show plainly that it is very necessary to make a correct diagnosis early in the attack, and be ready, if pos-

sible, to carry out the proper surgical measures, before sufficient time has elapsed to cause serious pathological change in the strangulated intestines.

REPORT OF A CASE OF A LARGE PAROVARIAN CYST, AND TWO CASES OF LARGE OVARIAN CYSTS.¹

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In view of the aggressive modern teaching of gynecology, large ovarian cystomas are comparatively rare; for these neoplasms are recognized early and submitted to early operative interference; unless they should fail to give rise to symptoms, and are accidentally discovered by the patient. This occurred in all three of the cases. These patients were operated upon within a period of eight weeks at the Samaritan Hospital last summer.

Kelly² gives the following table of 141 cases of large tumors of the ovary differentiated macroscopically in the operating room:

Multilocular ovarian cysts	38
Unilocular ovarian cysts	36
Parovarian cysts	22
Papillary tumors	20
Dermoid cysts	25

"A thorough sifting of this material, however, in the pathological laboratory has served to demonstrate the necessity of a careful microscopical examination in every case in order to establish the diagnosis on a scientific footing."

Case I.—F. O., single, twenty-one years of age, saleslady; was referred to the gynecological dispensary of the Samaritan Hospital, August 25, 1904, by Dr. Leon Van Horn, when the following history was obtained: Father and mother living, the former is forty-four years of age and in poor health, due to intestinal disease; the latter is forty-two years of age and in good health. Had one brother. There are two sisters living and one dead. During childhood the patient had measles and mumps. Puberty at thirteen, menses regular, painless, lasting five to seven days and profuse, last menstruation three weeks ago. When fifteen years of age she suffered from a very heavy cold which checked her menstruation. During the next five months she suffered constantly with pelvic inflammation. Since then there have been various attacks of oophoritis and vaginitis. About six weeks ago she noticed an enlargement of the right side of the abdomen, which has gradually increased. No pain. Slightly constipated.

Upon making a bimanual examination a very small conical cervix was found, displaced somewhat to the left. The entire right half of the pelvis was occupied by a fluctuating tumor which

¹ Read before the Obstetrical Society of Philadelphia, February 2, 1905.

² Operative Gynecology, Vol. II, p. 247.

extended up to the umbilicus. It was absolutely impossible to outline the uterus. This tumor was on the right side of the abdomen for its lower portion, but about midway between the pubis and the umbilicus; it extended to the left of the median line for about three inches. It was freely movable. A diagnosis of a unilocular, broad ligament cyst was made. The patient was admitted to the Samaritan Hospital July 31, 1904, and was operated upon the next day. Upon opening the abdomen the cyst sac was seen not to have the pearl gray color usually found in ovarian cysts, but was pink. A hand was introduced into the abdominal cavity and passed around the cyst which was found to be free from adhesions. The sac was tapped and emptied of a clear, light-straw colored fluid. Marked difficulty was experienced in dissecting out the sac from the broad ligament. When this was accomplished the floor of the pelvis was seen laid bare, and the ureter was found to be uninjured. There was troublesome bleeding from the pelvic wall which was not entirely controlled by ligatures and required a gauze packing. The opposite ovary was enlarged and contained a few follicular cysts, which were punctured and the ovary dropped back. The uterus was of the infantile type, and pushed well to the left. An uneventful recovery followed, the patient being discharged from the hospital three weeks subsequent to operation. Pathological diagnosis, unilocular parovarian cyst.

Case II.—R. J., thirty years of age, married, housewife; applied for treatment to the gynecological dispensary of the Samaritan Hospital, August 1, 1904, giving the following history: Father living and well; mother died at the age of thirty-seven from cardiac disease; two sisters and two brothers living and in good health. She had the usual diseases of childhood. Puberty at thirteen, menses regular, painless, lasting twenty-eight days. Has just finished menstruating. Married ten years, and has two children; normal labors and puerperiums. During the summer of 1903 she had a miscarriage, being about two months pregnant. During the latter part of December, 1903, she first noticed an enlargement in the left side of the abdomen, which has gradually increased but without discomfort. During the past week there has been pain in the left iliac region. Upon examination there was found an incomplete laceration of the pelvic floor; the uterus was in good position and freely movable. A large fluctuating, freely movable tumor was found on the left side above the pelvic brim. A diagnosis was made of a unilocular ovarian cyst of the left side. The patient was admitted to the Samaritan Hospital August 8, 1904, and operated upon the next day. After doing a Hegar's perineorrhaphy, the abdomen was opened. A cyst, free of adhesions, was found arising from the left ovary. The pedicle was long, and contained five twists; this was possibly the cause of the pain which she experienced during the week prior to operation. The sac was tapped and 3½

pints of a clear straw-colored fluid escaped. The pedicle was ligated and the cyst removed.

The opposite ovary was slightly enlarged and the seat of numerous small superficial follicular cysts. The cystic area was resected. Pathological diagnosis, unilocular adenocystoma. The patient made an uneventful recovery, and was discharged from the hospital on the nineteenth day.

Case III.—E. M., thirty-eight years of age, married, housewife. She was admitted to the Samaritan Hospital September 13, 1904, when the following history was taken: Father died at the age of sixty-nine years from pulmonary tuberculosis; mother living and well at the age of sixty-three years. She had the usual diseases of childhood. Puberty at eighteen, menses regular, painful, lasting three to four days. Last menstruation one week ago. Married thirteen years. She has had six children. All of her labors were normal excepting the fifth, which was instrumental. (I attended her in this labor and applied forceps owing to partial extension of the fetal head and its failure to engage at the superior strait.) The last child was born January, 1904. Subsequently to the birth of her fifth child she noticed a swelling of the abdomen, which gradually increased, and was attributed to being "a big stomach." When she became pregnant the last time the abdomen was so markedly enlarged that the physician who attended her thought she had a plural pregnancy, the cyst not being detected. The cyst did not interfere with this gestation or labor. After the birth of this child the abdomen rapidly increased in size. I saw her a few days before her admission to the hospital, when she consulted me for her abdominal enlargement. At that time there were no pressure symptoms, no inconvenience, and no interference with the gastric, respiratory or circulatory functions. She was slightly emaciated, but attributed this to her household work. Appetite good until the past few weeks; bowels regular.

The following measurements were taken:

Circumference at umbilicus	42 cm.
Circumference at the xiphoid appendage	33 cm.
Distance from xiphoid appendage to umbilicus	9½ cm.
Distance from umbilicus to symphysis pubis	10¾ cm.
Umbilicus to right anterior superior spine	11 cm.
Umbilicus to left anterior superior spine	9 cm.

Upon making a bimanual examination, an incomplete laceration of the pelvic floor was found. The cervix was in normal position, but it was impossible to outline the body of the uterus. Upon percussion, a flat note was elicited over the entire anterior wall of the abdomen, excepting very high up, where it was tympanitic. Tympany was also obtained deep down in the flanks. A diagnosis was made of a unilocular ovarian cyst of the right side.

The patient was operated upon September 14, 1904 (the day following admission to the hospital). Owing to the size of the cyst, and the possibility of complications, it was deemed best to open the abdomen first, and then, if the patient was in good condition, to do the plastic work on the pelvic floor. Upon opening the abdomen and introducing a hand, numerous adhesions were found between the cyst and the anterior abdominal wall. All of these with two exceptions were readily broken up, the latter were torn loose at the expense of the cyst sac, and required ligatures to control the bleeding. There were no adhesions laterally or posteriorly. The sac was tapped and seven liters of a clear straw-colored fluid evacuated. A small quantity of pseudomucin remained in the sac. The cyst was readily ligated and removed. The opposite ovary was sclerotic and was also removed. The uterus was found enlarged, and thought to be subinvolved. As the patient was in good condition upon the completion of the abdominal operation, an Emmet's perineorrhaphy was done.

At the end of forty-eight hours, a slight vaginal bleeding occurred, unaccompanied by pain, followed in about three hours by the expulsion of a two months' fetus. As the abortion was incomplete it was necessary to empty the uterus. Owing to the absence of subjective and objective signs and symptoms of pregnancy, the abortion may be attributable to too much handling of the uterus. This patient made an uneventful recovery and was discharged at the end of three weeks. The following measurements were taken previous to her leaving the hospital.

Circumference at the umbilicus	29	cm.
Circumference at the xiphoid appendage	28	cm.
Distance from the xiphoid appendage to the umbilicus	6	cm.
Distance from the umbilicus to symphysis pubis	5	cm.
Umbilicus to right anterior superior spine	5½	cm.
Umbilicus to left anterior superior spine	6	cm.

Pathological diagnosis, multilocular adenocystoma. There were several small daughter-cysts on the inner wall, otherwise there were no trabeculae or other evidence of the large sac having been multilocular.

Catgut was used throughout in each case for all ligatures and sutures. To all of these patients eserine salicylate was administered subsequent to operation. These patients have all been seen within the past three weeks. They are enjoying good health, and are increasing in weight.

The treatment of ovarian tumors is undoubtedly by extirpation as soon after the discovery of the tumor as the physical condition of the patient will permit. All of these patients were in good condition at the time diagnosis was made, and were operated upon as soon as a bed could be obtained for them. The reasons for early inter-

ference with ovarian growths are, the impossibility of deciding with certainty that the tumor is not malignant; the possibility of rupture at any moment; torsion of the pedicle with its disastrous consequences; inflammatory changes may supervene; adhesions may form and suppuration may take place, adding greatly to the gravity of an operation; with delay comes exhaustion, interference with the functions of the bowels and bladder; and, the probability of hydro-ureter from pressure. Also digestive respiration and circulatory symptoms.

Had it been possible to diagnose pregnancy in Case III, immediate operation was demanded just the same, because the cyst would have greatly interfered with the gravid uterus, and always implies exposure to the danger of rupture, infection and gangrene. Werder covers this point very nicely as follows: "When we consider the serious nature of the complication of pregnancy with an ovarian cyst and the safety and ease with which most tumors can be removed, no long arguments should be necessary in favor of the operative treatment of such complications no matter at what period the pregnancy and what size the uterus or condition the tumor. In fact, delay and procrastination seem to me much less excusable during pregnancy than at any other time, because the immediate dangers to the patient are much greater. That pregnancy is no contraindication to any necessary abdominal operation, is now well understood, and the results obtained at this time are equally as favorable as at any other time. Admitting then that the safety of the mother demands an immediate operation as soon as the diagnosis of ovarian cyst is made, what effect will this treatment have on the child? Abortion is not infrequently the direct result of the presence of an ovarian tumor, as shown by Remy, who found that among 321 cases of pregnancy complicated by ovarian cysts 55 or 17 per cent. aborted without operation. Among Orgler's 142 cases who survived operations, pregnancy was interrupted in 3 or 22 5/10 per cent., a result slightly in favor of the expectant plan of treatment from the standpoint of the child. Statistics of other operators, however, are more favorable, viz.: Bovee reports 38 cases of removal of both appendages with one maternal death followed by only four abortions or 12 6/10 per cent. The removal of both appendages therefore during pregnancy neither increases the danger to the mother nor does it increase the liability to miscarriage; on the contrary, there is a smaller percentage of abortion then when treated without operation. The earlier the tumor can be removed and the smaller the gravid uterus is at the time of operation, the less will the progress of pregnancy be interfered with because a large gravid uterus will necessarily render the operative technique more difficult and will be subjected to more handling and manipulation and possibly injury, thus increasing the tendency to abortion. It has been fully demonstrated that the removal of one

or both appendages in itself exercises very little if any influence on the pregnant uterus; the safety of the child is therefore no contraindication to the operation."

MEDICAL PROGRESS.

SURGERY.

The Preparation of Catgut.—A simple and reliable method of preparing catgut, as described by C. E. CONGDON (*Am. Jour. Obstet.*, January, 1905), is as follows: Take dry catgut in ten foot strands, test for weak points and irregularities and wind in a single layer on a glass cylinder such as an ordinary drainage tube. Secure each end and submerge in a 3 per cent. formalin solution. No. 4 is allowed to remain in four hours, No. 3 is allowed to remain in the solution three hours and five minutes, No. 2 for two hours and fifteen minutes, No. 1 for one hour and thirty-five minutes. The catgut is then removed and immediately places in running water for the same length of time that it has been in formalin solution. It is then dried and put away for future use. Catgut thus prepared may be sterilized for use by boiling and handled precisely like silk. The approximate time for which material thus prepared may be depended upon to furnish support to the tissues is as follows: No. 4, seven days; No. 3, five days; No. 2, three days, and No. 1, thirty-six hours. The employment of a five per cent. solution of formalin will cause the catgut to resist absorption twice as long as the use of the three per cent.

The Misuse of Tendon Transplantation.—Before undertaking this operation, the surgeon should always assure himself that the pathological process which furnishes the indication for the transplantation, must be at a standstill and not progressing. That sufficient care in selecting cases is not always shown, is the opinion of OPPENHEIM (*Berl. klin. Woch.*, February 13, 1905), who reports three cases in which operation was done where the palsies were due to progressive central lesions. The first of these was a case of progressive muscular atrophy, where the tendon of the relatively well functioning triceps surae was split and grafted upon the peroneus longus without any favorable results no abduction of the foot being secured. In the second case a spinal form of progressive muscular atrophy was present as the result of a chronic anterior poliomyelitis. Here also, in spite of the progressive character of the disease, the tendon of the extensor hallucis longus was grafted on the tibialis anticus. In the third case, an elderly woman, there had been present for some time pain and weakness in one leg, for which a muscle transplantation was done, although similar symptoms were beginning in the other leg. No relief was secured and an examination by the author, three months later, showed that the trouble was due to pressure on the lumbosacral segments of the cord by a tumor which was probably malignant. This was confirmed by the X-ray. The duty of the orthopedic operator in such cases is evident, and in every case submitted for operation, the precautions already noted as to the character of the disease should be noted.

Results of Fourteen Hundred Operations for the Radical Cure of Hernia in Children, Performed at the Hospital for Ruptured and Crippled Between 1891 and 1904.—W. T. BULL and W. R. COLEY (*Med. Rec.*, March 18, 1905) report in detail the results of 1,424 hernia operations, of which all but

20 were on children under the age of fourteen years. It has been the custom of the authors to treat all their cases of hernia in children, with certain few exceptions, for a period—usually one or two years—with a truss before advising operation. If at the end of this time no improvement is observed, operation is advised. Under the age of four years a very considerable number of cases of inguinal hernia, and nearly all cases of umbilical hernia, can be cured by truss treatment. Of the 1,424 operations reported, 1,354 were for inguinal hernia, 35 for femoral, 10 for umbilical, 8 for ventral, 2 for congenital hernia of the umbilical cord, 2 for epigastric, and 1 for lumbar hernia. The great majority of the operations for inguinal hernia were performed according to Bassini's method, using chromicized kangaroo tendon for suture material. In most cases an extra suture was placed above the cord. Excision of the veins of the cord seems unnecessary, at least in children. Operation without transplantation of the cord appears to give less satisfactory results, though this is not yet certain, owing to the disparity in the numbers of the cases treated by the two methods. Twelve operations were performed for strangulated hernia, and the cases show that strangulation is more common during the first two years of life than during the next decade. The seat of strangulation in every instance was the result of constriction by the tight external ring. Eleven relapses in all were noted, and the authors conclude that the majority of recurrences take place during the first six months after operation, and about 90 per cent. occur during the first year. A comparison of cases operated with and without rubber gloves shows suppuration in 4.4 per cent. without gloves, and 2.3 per cent. with gloves. There were four deaths during the series.

A Simple Heat Method of Sterilizing and Storing Catgut.—WILLARD BARTLETT (*The Interstate Medical Journal*, No. 3, 1905). The treatment of raw catgut is as follows: (1) The strands are cut into convenient lengths, say thirty inches, and made into little coils about as large as a silver quarter. These coils in any desired number are then strung like beads on to a thread so that the whole quantity can be conveniently handled by simply grasping the thread. (2) The string of catgut coils is dried for one hour at a temperature of 180° F., and then for a second hour at 220° F., the change in temperature being gradually accomplished. (3) The catgut is placed in liquid alcohol, where it is allowed to remain until perfectly "clear," in the sense that the term is used in the preparation of histological specimens. This is usually accomplished in a few hours, though it has been my custom to allow the gut to remain in the oil over night. (4) The vessel containing the oil is placed upon a sand bath, and the temperature raised during one hour to 320° F., which temperature is maintained for a second hour. (5) By seizing the thread with a sterile forcep the catgut is lifted out of the oil and placed in a mixture of iodine crystals, one part in Columbian Spirits (deodorized methyl alcohol), one hundred parts. In this fluid it is stored permanently, and is ready for use in twenty-four hours; the thread is then cut and withdrawn. It seems important that the gut should be thoroughly "cleared" before the oil is heated, in order that the temperature of the center of the strand becomes as high as that of the oil outside. It may be noted further that the oil is not removed from the gut before placing it in the storing solution. This is done purposely, since catgut which is perfectly free from oil is so very sensitive to the action of water that it readily untwists and becomes tangled after it is used in a

wound but a few moments. This storing fluid simply takes off enough oil from the exterior of the strand so that it is not too slippery for use, and the albolene being a bland, non-irritating substance, there is no reason why it cannot be safely left in the gut. The iodine rapidly permeates the strand; the same will be found stained black after a few hours, and consequently the surgeon will have the assurance that he is introducing an antiseptic as well as a thoroughly sterile suture material.

MEDICINE.

City Dust and Patent Medicine Advertisements.—

ROBERT HESSLER (*Am. Med.*, March 5, 1905) traces the relationship existing between the amount of infective dust in a city and the number, kind, and size of patent medicine advertisements in the newspapers. City dust differs from country road dust in the presence of spittle. In spitting and in taking patent medicines we certainly excel. Medical advertisements may be divided into three classes: (1) Patent medicines proper, of unknown composition and proprietary. (2) Those of quacks. (3) Of lotions, pennyroyal pills, syringes, etc. Patent medicines can be divided into groups, according to their use; the largest group may be designated as the dust group, because it refers to diseases and conditions that depend on infective dust. In patent medicine advertisements there is a large list of names that in most instances, when applied by the laity in self-diagnosed cases, must be regarded as synonyms of dust infection; among these names are the following: Catarrh, colds, cough, grip, tonsillitis, pleurisy, rheumatism, backache, kidney disease, lumbago, muscular rheumatism, nervousness, biliousness, etc. Their names may be grouped by marking names of respiratory affection like catarrh, colds, cough, in red; those referring to rheumatic conditions in blue; nervous conditions in yellow, etc., a general idea of this dust group of patent medicine advertisements may be obtained. The amount of space occupied by medical advertisements varies greatly in different papers and in different countries. In Indiana newspapers the amount varied from 2.5 per cent to 14.5 per cent; dust advertisements varied from one per cent. in a comparatively city up to ten per cent. in a dusty one. When one-eighth of the total space of a newspaper is occupied by patent medicine advertisements, whose existence rests mainly on the condition of the streets and sidewalks it may be well to inquire if there is not something wrong with that municipality. There is also a seasonal variation; low ebb is reached in the summer, high tides occur in the fall and spring. The hot rays of the sun and street sprinkling in the summer and the lack of free ventilation in winter are powerful factors. Patent medicine men may not know why their nostrums are in demand, but they know that it pays to advertise in certain towns—dusty towns, and where the spitter is unmolested. What the people save by not keeping their city clean they are compelled to spend in a vain attempt to counteract the evil influence of the dust.

Digestion of Caseins and their Relation to Certain Problems in Infant Feeding.—T. S. SOUTHWORTH (*Med. Rec.*, March 4, 1905) says that the nature of casein digestion is an important feature in the management of artificially-fed infants that has not received the consideration it deserves. Hammersten's erroneous conclusions have been copied and accepted without question by so many authors that it is only

very recently that it has been shown that much of the teaching of the past requires recasting. The ferment first formed in the stomach of the young is the rennet ferment, which changes casein into paracasein. At first this is digested in the intestine, but as hydrochloric acid begins to be secreted this combines with the paracasein, forming hydrochloride of casein, which is fitted for peptic digestion. The greater the amount of acid present, the tougher will be the curd; but at the same time more pepsin is secreted, so that as the infant develops the work performed by the stomach is regulated automatically. An excess of acid causes the formation of a less digestible dihydrochloride of paracasein; but if the acid is so abundant that some of it is uncombined, or free, the new substance is readily digested. The presence of lactic acid in sour milk may greatly modify the digestive processes in the infant's stomach, and this question, as well as the rationale of adding alkalies to food mixtures, is discussed in detail by the author.

Acne and Its Treatment.—G. T. JACKSON (*Med. Rec.*, March 18, 1905) says that acne is even commoner than eczema, and that while it is true that the disease is often stubborn, the majority of cases can be greatly benefited in a short time, and very many of them cured promptly. The indications for treatment are as follows: (1) Improve the condition of the skin, so that it will no longer be a suitable culture ground for the bacillus. (2) Empty the follicles of the skin of the colonies of bacilli. (3) Keep the skin constantly aseptic, so that any bacilli that escape on it will be killed, and no new infection of the skin will be possible. The first indication is met by attention to the patient's general health by means of baths, diet, exercise, attention to hygiene, and lastly, drugs. The follicles are emptied by the use of the curette, the acne lancet, and the comedo expressor. The best local application is sulphur, preferably in the form of the old lotio alba, the formula for which is: Zinc sulphate and potassium sulphuret, of each, 3i-ii; rose water, q. s. ad. 5iv. This is to be shaken up before using. Resorcin is also useful, as well as sulphur soap. The use of the X-ray should be limited to intractable cases, and requires great caution to prevent doing harm.

Cholecystitis as a Complication of Lobar Pneumonia.—J. M. ANDERS (*Am. Med.*, March 18, 1905) reports three cases. Although an analysis of these cases does not warrant drawing any general conclusions still the clinical observations may serve to direct attention to cholecystitis as a complication in rare cases of lobar pneumonia. The local symptoms and physical signs are characteristic, but the type of the condition is not severe. It is to a great extent overshadowed by the pneumonic condition. Although no general or constitutional symptoms, distinctive of the lesions, are recognizable, Anders is pretty fairly convinced that the clinical course of pneumonia cases is not, as a rule, materially modified by the complications of catarrhal cholecystitis except in cases in which chronic hepatic disease existed previously, when the toxemic symptoms may be intensified by the development of an acute, widespread cholangitis and cholecystitis. Two of the cases terminated in recovery but Anders states this result was not due to any special method of treatment, as attention was mainly bestowed upon the serious primary affection. A mild saline laxative was employed in one of the cases and small doses of mild mercuric chlorid in the other. In the case which terminated fatally nothing but the general treatment of the pneumonia was carried out, because the grave pneumonic features

and the cardiac and pulmonary complications called for active measures.

Urine Examination.—I. R. C. CABOT (*Journal A. M. A.*, March 18-25) states that incited by a statement of Council man that the chemical and microscopic examination of the urine failed to give certain information of the character of the renal lesions, as well as by discrepancies coming under his own observation, he has compared critically the records and post-mortem findings in the cases that have come to autopsy in the Massachusetts General Hospital since 1893. Although the number of cases is not large, he thinks they warrant the following conclusions: (1) Many cases of acute glomerular nephritis occur and are unrecognized by any known methods of examination. (2) The diagnosis is at fault in some cases of subacute and chronic glomerular nephritis, but in the great majority of cases the condition of the urine, taken in connection with other symptoms, foretold the autopsy findings. (3) In chronic interstitial nephritis the diagnostic resources appear to be neither so sufficient as in the chronic glomerular form, nor so inadequate as in the acute glomerular nephritis. In about a third of the cases the diagnosis was correctly made before death. (4) Among other conditions mistaken for nephritis by too much reliance on the urinary findings are senile and arteriosclerotic condition, mistaken for chronic nephritis, while in conditions involving passive congestion or acute kidney degenerations, the urine occasionally simulates that of acute nephritis. Even where no lesions are found at autopsy the urine is sometimes highly albuminous and full of casts. (5) In ordinary urinary examinations the common errors are: (a) The attempts to estimate urea without accurate knowledge of the patient's metabolism. (b) Stating that renal cells are present when all that is seen are small mononuclear cells, perhaps from the kidney tubules, perhaps not. (6) Cryoscopy and other attempts to test the renal permeability more directly are not yet capable of supplementing in clinical work the older methods of examination. Cabot holds that the vast majority of estimations of urinary solids, including urea, are a waste of time, since they are not and can not be made part of a general metabolism experiment, and that the attempt to estimate the anatomic condition of the kidney by measuring albumin and by searching for casts is fallacious. The most reliable data are the twenty-four hour quantity, the specific gravity and the color.

PHYSIOLOGY.

Physiological and Pharmacological Investigations on the Uterus.—The uterus when removed from the body reveals a number of important phenomena which indicate that it has an inherent set of capacities independent of the rest of the economy. E. M. KURDINOWSKI (*Arch. f. Anat. und Physiol.*, December 28, 1904) finds that at all periods of the sexual life, the womb is endowed with an automatic contractility. This is true of the virgin uterus also. This automaticity exhibits itself in waves separated by pauses. The uterus reacts to mechanical and thermic stimuli, but is only slightly susceptible to electrical stimuli. Toward the end of pregnancy the excised uterus is capable of parturition. The broad and round ligaments take a useful part in the general contractions of the organ. The uterus is but little dependent upon the central nervous system. The isolated organ presents peculiar advantages for the investigation of the pharmacology of the uterine drugs. Hydrastinin causes independently of the nervous system a tetanic contraction of the uterus. So far as this drug affects the blood ves-

sels of the uterus, it does not cause this narrowing by acting locally, but by acting upon their governing nerve-centers. Sphacelic acid acts similarly to hydrastinin. Adrenalin, even in the smallest doses, causes a powerful reaction, producing an increased contraction of a tetanic character, and also increasing uterine irritability. It narrows very markedly the uterine vessels. Narcotic poisons of the fatty acid series (chloral hydrate and alcohol) have relatively little effect on the isolated uterus. Only relatively large doses of these poisons paralyze the contractile power of the organ.

Ligature of the Pancreatic Duct.—It has been found by W. LOMMOSO (*Jour. de Physiol.*, January 15, 1905) that ligature or excision of the duct of Wirsung does not necessarily lead, at least in the dog, to atrophy or sclerosis of the pancreas, although frequently either one of these changes may partially occur. This supports the view that besides its digestive secretion, the pancreas has another function which persists after its digestive activity has been abolished.

The Participation of the Acini in the Internal Secretion of the Pancreas.—The injection of oil into or the ligature of the duct of Wirsung, causes an increase in the glycolytic power of the blood. This was shown twelve years ago by R. LEVINE (*Jour. de Physiol.*, January 15, 1905), who now finds that the increased pressure in the pancreatic ducts has hardly any effect upon the islands of Langerhans. It would appear, therefore, as if the ligature of the duct of Wirsung augments the glycolytic power of the blood only by compressing the cells of the acini, thus causing them to pour their secretion more copiously into the blood-vessels. This research tends to belittle the rôle of the islands of Langerhans in the elaboration of products that favor glycolysis, giving this function to the cells of the acini. There is some evidence, not yet published, that trypsin is not without influence on glycolysis.

Alkalescence of Blood.—Various methods are in vogue for determining the alkalinity of the blood; some enable an estimation of the total alkalinity, while others disregard the basic principle in union with the proteids and only give an idea of the inorganic alkali present. By careful experiments, A. LANDAU (*Arch. f. exp. Path. u. Pharmacol.*, Vol. 52, Nos. 3 and 4) has shown that only the former methods (especially titration with acid and lackmoid as indicator) gives valuable results, since in acid intoxication, part of the acid will also replace the proteid alkali, so that this factor should not be disregarded. The author proceeds as follows: Five c.c. of blood are mixed with a small amount of sodium oxalate and then titrated with one-twentieth normal sulphuric acid, using lackmoid as indicator. Fifty-four per cent of the total alkali was found combined with proteid and the remaining 46 per cent. express the mineral alkalescence in normal rabbit. When rabbits were poisoned with phosphorus or hydrochloric acid, the total alkalescence was much less, but the proportion between organic and mineral alkali remained about the same. The acid united to the proteid is apt to do more damage than the acid combined with inorganic bases since it will be excreted less readily.

Properties of Hirudin.—Hirudin, an active principle obtained from the heads of leeches, has recently been introduced to prevent the coagulation of blood, and the experiments of A. BOSSO (*Arch. f. exp. Path. u. Pharmacol.*, Vol. 52, Nos. 3 and 4) prove that

this substance is indeed a great help in physiological experiments. Blood which remains fluid owing to the addition of hirudin, cannot be made to clot again, even if strong styptics, such as chloride of iron, are employed. The relation between hirudin and the principles which bring about clotting in the blood, seems to be a definite one, so that the necessary amount may be calculated for every given proportion of blood. If clotting has once started, the addition of hirudin will inhibit the process. Injected into animals, hirudin will not materially influence circulation or respiration and toxic symptoms were never observed. If 23 milligrams per kilogram body-weight are employed, clotting will not occur until one hour after injection; with 51 milligrams, this period will be lengthened to four hours. The excretion occurs chiefly through the kidneys, so that the urine of animals treated with hirudin will also inhibit clotting.

Effects on Heart Rate and Blood Pressures of Severe Hemorrhage and Subsequent Infusion of Sodium Bicarbonate.—As the result of a primary hemorrhage in the dog, the pulse rate is much increased, according to P. M. DAWSON (*Jour. of Exper. Med.*, February 25, 1905). This acceleration depends upon the extent of the tonic activity of the vagus at the time the bleeding was begun. Secondary hemorrhage is followed either by no increase at all, and sometimes by a diminution of pulse rate. Hemorrhage causes a fall of blood pressure, but the extent of the fall does not depend closely upon the amount of blood withdrawn. If sodium chloride be infused after severe hemorrhage, the immediate effect is an increase of the blood pressures, of which the systolic pressure is the most nearly restored to normal. If, now, to solutions of the chloride an increasing percentage of sodium bicarbonate be added, the rise in the pressures is markedly increased. The addition of one-half per cent. bicarbonate to the chloride causes a maximum rise in the blood pressure, which may reach 115 per cent. of its original value. One must be cautious in drawing inferences with regard to the clinical value of infusions of sodium bicarbonate. The experiments indicate that the addition of sodium bicarbonate to the infused fluid may be expected to have a beneficial action. In extreme cases of shock due to loss of blood, the addition of from one-half to one per cent. of the bicarbonate to the solution of .8 per cent. sodium chloride may be of advantage. The rise in all the pressures, especially the diastolic pressure, is more pronounced than when the pure chloride is used. The quantity of fluid required is smaller than is the case with the pure chloride, and hence the greater is the rapidity with which the solution can be hurried into the circulation, a matter of some importance in desperate cases. There is, however, a possibility of overworking the heart. The author suggests that in the beginning the intravenous infusion should contain bicarbonate, but later it might be omitted.

Certain Aspects of Experimental Diabetes.—The results obtained by Herter in inducing glycosuria by means of painting the surface of the pancreas with adrenalin have been also obtained by F. P. UNDERHILL (*Amer. Jour. Physiol.*, February, 1905), who painted the pancreas with piperidine. The author found that the same results are obtained by painting the spleen; by intraperitoneal injection, or by direct introduction into the blood. He believes that the experimental diabetes is not due to an irritant action upon, or an "insult" to, the pancreas. The action of piperidine and other drugs in this respect is not spe-

cific. Glycosuria is provoked by piperidine, potassium cyanide, ether, chloroform, morphine, carbon, monoxide, strychnine, pyrogallol, pyrrol, pyridine, conine, nicotine, curare, etc. A tentative explanation is advanced that these drugs produce glycosuria by acting, not in the pancreatic cells, but in the respiratory center in producing dyspnea. The latter calls forth a marked glycosuria without the intervention of drugs. The administration of oxygen in the experimental diabetes produced by piperidine, inhibits the sugar output. The conclusion is reached that experimental diabetes is due to diminished oxidation of carbohydrate material; with the consequent accumulation of the latter in the blood and its elimination by the kidneys.

The Laws Governing the Chemical Composition of Urine.—A careful study of twenty-four normal urines secreted under different standards of diet revealed interesting results to O. FOLLER (*Amer. Jour. Physiol.*, February, 1905). The distribution of the nitrogen in urine among urea and the other nitrogenous constituents depends on the absolute amount of total nitrogen present. The distribution of the sulphur among the three chief normal representatives—inorganic sulphates, ethereal sulphates and "neutral" sulphur—depends on the absolute amount of sulphur present. The part played by the kreatinine as a factor in the relative distribution of the urinary nitrogen is of great interest. The absolute quantity of kreatinine eliminated in the urine on a meat free diet is a constant quantity for different individuals, but wholly independent of quantitative changes in the total amount of nitrogen eliminated. When the total amount of protein metabolism is greatly reduced, the absolute quantity of uric acid is diminished, but not nearly in proportion to the diminution in the total nitrogen, and the per cent. of the uric acid nitrogen in terms of the total nitrogen is therefore much increased. With pronounced diminution in the protein-metabolism, there is usually, but not always, a decrease in the absolute quantity of ammonia eliminated. Urea is the only nitrogenous substance which suffers a relative as well as an absolute diminution with a diminution in the total protein-metabolism. In ten different cases the author was able to reduce the amount of urea 60 per cent. of the total nitrogen. The urinary indican is not to any extent a product of the general protein-metabolism, is therefore probably, as is generally supposed a product of intestinal putrefaction, and may consequently be assumed to indicate approximately the degree of putrefaction in the intestinal tract. The ethereal sulphates can only in part be due to intestinal putrefaction, but they represent, on the contrary, a form of sulphur metabolism which becomes more prominent when the food contains little or no protein. The volume of urine eliminated depends directly upon the amount of water consumed. The greatest volumes of urine frequently occur on days when the body gains in weight. The volume of urine eliminated in normal persons is largely a personal peculiarity, and is probably to a great extent inversely in proportion to the amount given off through the pores of the skin.

PATHOLOGY AND BACTERIOLOGY.

Pathology of Gout.—In two cases of gout that had died owing to a chronic interstitial nephritis, F. ROSENBAUGH (*Virchow's Archiv*, Vol. 179, No. 2) found the characteristic changes of gout, namely necrotic areas with deposits of crystals of uric acid, in the bone and bone-marrow as well as in the usual sites. In the bone a disintegration of ground-substance was found, which can only be a result of the chemical action

of the acid; the bone-marrow on the other hand shows a proliferation of dense fibrous tissue which was infiltrated with lymphocytes and giant-cells. It is probable that even in the usual locations, the necroses are the real and primary lesions and are not the manifestations of atrophy secondary to the deposit of the crystals.

Treatment of Night-Sweats.—One of the most disagreeable symptoms of early pulmonary tuberculosis is nocturnal perspiration, since it robs the patients of sleep and weakens them considerably. The cause of these night-sweats is not known, but they are probably a result of the action of the toxins of the tubercle bacillus on the central nervous system. According to H. ULRICH (*Therap. Monatshft.*, December, 1904) the treatment is very unsatisfactory and hence the number of drugs recommended, legion. Antipyretics and atropine have been warmly recommended but the former very often aggravate the condition while a tolerance is very soon established for the latter. Agaricin is very uncertain in its action and may cause diarrhea and the same applies to camphoric acid and its compounds. The author has invariably seen the best results after the use of veronal in doses of 0.3 gm., rarely increased to 0.6 gm. In conjunction with this, the patient should sleep in a cool room with open window and use one of the many dusting-powders recommended.

Effect of Altitude on the Blood.—In order to study the effects of a high altitude on the blood, K. BÜRGER (*Münch. med. Woch.*, February 7, 1905) analyzed the amount of iron contained in the organs of animals in the mountains as compared with control animals. Even after a short stay in the mountains, a marked reaction is noticed since both liver and blood soon become rich in iron. Probably reserve depots are opened and more hemoglobin is passed into the blood; since this is used up more rapidly, more iron will be deposited in the liver. After the second or third week the hemopoietic apparatus will cease its overproduction and the liver will now give up its iron to the blood. As a result, the iron contents of the blood will gradually increase, while those of the liver will first rise and then fall. This observation is in perfect accord with the result of blood-counts made at high altitudes. The chief stimulant is probably the rarefied air, but it is also likely that radio-activity, which is present to a marked degree in the mountains, plays a prominent part.

Eosinophilia in Anchylostomiasis.—In 500 cases of anchylostomiasis examined by H. BRUNS, D. LIEPMAN and V. MAKEL (*Münch. med. Woch.*, February 7, 1905), an increase of eosinophiles over five per cent. was found in 92.1 per cent. In only rare instances more than 20 per cent. were found and in one case 42 per cent. were counted. The blood was obtained from miners who had eggs in the stools and from such who were supposed to be cured and whose feces were no longer infected. There does not seem to be any definite relation between the degree of infection and the number of eosinophile leucocytes in the blood and it is probable that a high percentage of the latter persist half to one year after, all worms are expelled. The examination of the feces is preferable to the blood examination since it is more rapid where a large number of individuals is concerned and since it will not include among the positive cases those who are already cured. The blood examination is, however, of value in detecting deception; thus, if many eosinophiles are found and the repeated examination of the feces is negative, the stool should be voided in the presence of a responsible person. Where no eggs are found in a very sus-

picious case, the entire stool may be placed in the incubator for several days to permit the larvae to develop.

Ultramicroscopic Examinations.—Further examinations have convinced L. MICHAELIS (*Virchow's Archiv*, Vol. 179, No. 2) that various dyes behave differently when examined with the new ultramicroscope. Thus, fluorescent solutions never show the presence of small particles no matter how high the magnification, while the very opposite holds with the sulfo-acids with large molecules (indulin, aniline blue, etc.). An intermediate position is occupied by fuchsin, picric acid, etc.; that is, numerous particles are seen but the great majority are too small to give separate impressions. It seems that those dyes which are held in finest suspension possess an elective action to either nucleus or protoplasm while those in coarsest suspension stain more diffusely. The instrument is hardly applicable for the study of stained specimens since all solid particles are surrounded by rings of colored light which makes their identification difficult. In blood films the author has, however, been able to see very small basophile granulations which could not be identified with the usual methods. Albumin in solution behaves like fuchsin, that is, a portion appears in the form of fine granules while another portion is not rendered visible by even intense focal illumination. It is for this reason that quantitative estimations of albumin are not reliable if conducted with the ultramicroscope, as has been recommended. The character of the solution in which the albumin is suspended is also of importance. Thus, with distilled water more particles will be visible than with physiological salt solution, even if the concentration of the albumin is exactly the same.

Origin of Acute Miliary Tuberculosis.—All the autopsy records of four years were carefully investigated by H. SILBERGALT (*Virchow's Archiv*, Vol. 179, No. 2) in order to decide how a local tuberculous process generally becomes disseminated. In 95 per cent. of the cases tubercles of the vessels or of the thoracic duct were found which had permitted the bacilli to gain the blood-stream. It is well known that Rippert strongly opposes this theory since he has frequently hunted in vain for tubercles large enough in the walls of the vessels in his cases, to account for the large number of metastatic deposits in the body. Furthermore, he states that the focus is not always ulcerated and that the different size of the tubercles especially in the lung argues for a different age. It seems more probable to him that an active proliferation occurs into the capillaries and that the blood is constantly contaminated from this source. The author states however that the capillary focus is generally inadequate and that it is often present even where there is no miliary tuberculosis. The unequal size of the tubercles is due to the fact that the same number of bacilli is not transported to all parts of the body and that different tissues do not permit an equal development.

THERAPEUTICS.

Serumtherapy of Pneumonia.—The antipneumonia serum of Römer was originally intended for the treatment of *ulcus serpens*, which is usually caused by pneumococci. The serum is polyvalent in two senses, in that it is a mixture of the sera of different animals, treated with different strands of cocci, pathogenic to man. H. PASSLER (*Deutsch. Arch. f. klin. Med.*, Vol. 82, Nos 3 and 4) has tried it in 24 cases of lobar pneumonia and reports as follows: One to six doses were injected, varying from 10 to 30 c.c.; the largest total amount employed was 110

c.c. An injurious action was never seen. An improvement in the general condition was almost always observed directly after the injection and the temperature generally dropped after six to twelve hours. A migration of the process was not common, but the serum never retarded the consolidation in the affected lobe. A pronounced symptom was the remarkable improvement in circulation: when pallor, cyanosis and feeble heart-sounds were present, the serum frequently restored normal cardiac action. Pleural complications were present in a few cases, but never assumed marked proportions. The number of leucocytes usually remained unaltered before and after injection. Pneumococci could be grown from the blood in six cases; of those, three died and three recovered. Altogether, the disease was fatal in four cases. The author believes that the serum undoubtedly affects the pneumonic process, for complications are less frequent and the crisis seems to appear earlier. He concludes by stating that its use is not indicated in all cases since it is too expensive and there is no advantage in giving it early. In severe cases a trial is however in place, especially if the germs can be recovered from the blood or if the hyperleucocytosis changes to hypoleucocytosis. A diminished, vital resistance, such as is found in the aged, in alcoholics or in those suffering from cardiac failure, is also an indication. In threatening cardiac paralysis and pulmonary edema, the serum may do more good than any other form of medication. If the first injection is without effect, little is to be expected from a second, but improvement, even if only temporary, will call for a repetition.

The Limitation of the Value of Nitroglycerin as a Therapeutic Agent.—H. P. LOOMIS (*Med. Rec.*, March 18, 1905) has tested the effect of this drug on arterial pressure in patients by means of the sphygmomanometer, and also in animals, and finds that high arterial pressure in man is not perceptibly affected by it nor is dilatation of the blood-vessels apparent. Some of the conclusions reached are as follows: The usual dose of nitroglycerin of 1-100 grain is too small to produce any effect in pathological conditions; 1-50 grain is a minimum dose. It is a perfectly safe drug to use. Even in large and repeated doses the author has never seen any ill-effects. Its effects are very transient, as shown by the experiments on the dogs, and the ordinary dose of 1-100 grain every four hours could not possibly have any effect on the arteries. Nitroglycerin is said to increase the quantity of urine in chronic Bright's disease, but after keeping accurate records of the daily amount of urine passed, the author was never able to satisfy himself that any increase seen was due to this drug. In conditions due to arterial spasms, so-called, such as angina pectoris, migraine, asthma, nitroglycerin may be of benefit, in full doses often repeated, but not in arterial sclerosis where the arteries themselves are more or less changed.

Pyramidon in Tuberculosis.—The fever of consumptives is managed as follows by R. SCHULZ (*Zeitsch. f. Krankenpflege*, November, 1904): As soon as the patient reaches the hospital he is put to bed. If the fever does not disappear spontaneously after five to six days, he receives 5 grains of pyramidon in half a glass of water, which he is instructed to swallow slowly during half an hour after his midday meal. If effective, the dose may be diminished after several days, while sometimes it may be necessary to give more. With inverse type of fever, the drug must be administered during the early morning

hours. Bad after-effects are rare and never amount to more than urticaria, profuse perspiration or darkened urine. A marked improvement will be noticed in the condition of the patients as soon as the fever has disappeared; they will increase in weight rapidly and the process in the lungs will tend to recede.

Toxicity of Cresols.—With a number of animals (frogs, mice, rabbits, cats) examined by K. TOLLENS (*Arch. f. exp. Path. u. Pharmac.*, Vol. 52, Nos. 3 and 4), the three isomeric cresols behaved differently. Paracresol is decidedly more poisonous than carbolic acid for both carnivorous and herbivorous warm-blooded animals; orthocresol is equally as toxic as carbolic acid but metacresol is less toxic. In frogs, however, all three cresols are less toxic. A number of crude and saponified samples of cresol on the market were also examined. Contrary to the usual statements, they gave rise to the same symptoms in about the same dosage as carbolic acid and some of the crude samples even exceeded the latter in toxicity. The presence of soap does not seem to diminish the intensity of action and the same is true for carbolic acid for the latter plus soap, introduced into the stomach of an animal, kills just as rapidly as carbolic acid alone.

Hermetine, a New Antiseptic.—The beneficial effects of sea-bathing may in some cases be due to active therapeutic properties of the water. M. LEGOURD (*Repert. de Therap.*, February, 1905), in the gynecological service of Dr. Leblond at Saint-Lazare, calls attention to the new and powerful antiseptic, hermetin. This is merely sea-water which has undergone electrolysis. It contains oxygenated compounds of chlorine in a nascent state. It is non-toxic, neutral, and from the viewpoint of its large content in chlorine, it is not to be distinguished from Labarraque's solution. The author reports favorable results from the use of this antiseptic in affections of the vulva, vagina and uterus.

PRESCRIPTION HINTS.

Treatment of Acute Coryza.—

R Phenic acid	3i
Liq. ammonia	5i
Proof spirits	3ii
Water	3iv

Pour 20 drops on blotting paper and breathe the vapors through the nose every hour.

Or

R Boric acid	3i
Menthol	grs. x
Cocaine	grs. v
Proof spirit	℥v
Talc powder	3ii

To be used as snuff.

R Iodide of sodium	3i
Syrup of bitter orange	3i
Syrup of lemons	3i
Water	3vi

A tablespoonful three times a day in milk.

Bronchial Asthma with Emphysema.—

R Equinæ	gr. v
Atrop. sulph.	gr. 1/100
Dionini	gr. 1/4

Dr. tal. doses No. xii. Sig.: 1 powder three times a day.

R Iodipini	3 iii
Ol. menth. pip.	gtts. v

Sig.: Teaspoonful three times a day.—Bjorkman.

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SATURDAY, APRIL 1, 1905.

ANTIVIVISECTION.

THE New England Antivivisection Society, like other "antis" which might be named, appears to be drawing its last useless breaths, and that without the use of any anesthetic (even curare), strange as it may seem. It, or at least its activity, so baneful to human and animal weal, seems to be exhausted. This is mainly because its diet of misrepresentation and of zoophilistic hysteria no longer nourishes in the atmosphere of public and legislative opinion which begins, at last, really to understand that the physicians and physiologists of Massachusetts are not criminals, but rather ill-paid benefactors to mankind.

At the hearing of the seventh or eighth proposed antivivisection bill on March 7 and 8 before the Committee of Probate and Chancery of the Massachusetts Legislature, M. W. Green, the president of the society, was not present, nor was the obvious high-priestess of the movement, Mrs. Ward, although the latter sent her usual contribution to the antivivisectional literature, and it was read by an uninformed clergyman, with the usual benefits to the cause of animal experimentation. Then, as always, emotion failed to fill the yawning chasm

which the lack of facts revealed. The same old recital of statements as to things which perhaps took place in Europe forty or fifty or sixty years ago, before the discovery of anesthetics, was listened to—respectfully almost, and one heard of fancied cruelties which would make the spirit of Tiberius Caesar groan with pity, and to the unsupported but oft-repeated assertion that these things were taking place to-day in the laboratories of Harvard University and of Tufts College, under the oversight of men like President Eliot and the late President Capen. Yet no single instance of any cruelty in the colleges of Massachusetts or of America was shown. Dr. Leffingwell came up from New York apparently to say that he had, many years ago, when younger, done experiments on animals himself, and that to-day cruelty was rampant. Ex-Governor Brackett said that he had never seen any animal experimentation himself, but that he understood that the medical profession, in its researches on animals, was unspeakably cruel. The editor of the *Transcript* spoke feelingly of Professor Osler's famous joke and remarks, and used them as a basis for supposing the existence of cruelty in experiments on animals. And so for nearly three hours the committee of eleven lawyers were entertained.

The next day for three hours this committee heard the other side, and they heard facts and not stale and long-refuted suspicions, science and not mere hysterical sentiment. The prominent surgeons, the hospital superintendents, the State boards of health and of cattle commissioners, nearly all the city and town boards of health in the State, practically all the colleges, practitioners—all these told them so much of accomplished fact and future promise from animal experimentation that it made an impression. One or two members of the committee who came with anti feelings went to luncheon with a sort of respect even for a physician who was a vivisectioner, and a few days after helped to swell the majority against a favorable reporting of the bill. Thus it was that the committee, by a vote of nine to two, reported the usual "leave to withdraw," and the two said not a word.

The fund which it is reported has been given to carry on the agitation continually, will likely enough insure a further officious effort on the part of Lawyer French next spring, but the soul of the movement probably is dead, killed by facts and common sense. Soon the Great and

General Court of Massachusetts (the ancient name for the legislature) will come to think of the annual antivivisection spasm as a necessary movement—until the fund shall fail. Then no longer will it be annually claimed, even before a dozen citizens, that the hospitals, boards of health, and universities of the old Bay State are criminal because of inhuman cruelties, when in fact these institutions owe their very existence to philanthropy and to real philo-Semitism—to which indeed each continually ministers, as even a busy public appreciates.

THE NEXT NOBEL AWARDS.

AMERICANS are usually said not to miss opportunities nor to fail to try for the prizes that may possibly come their way. There can scarcely fail to be the impression among those who realize the conditions that obtain in the matter of the Nobel prizes; for, as was suggested some time ago by the *Journal of the American Medical Association*, the medical profession of this country seems to be neglecting precious opportunities. These prizes, amounting to \$40,000 each, five in all, are awarded each year for the best work in physics, in chemistry, in medicine, in literature, and, curiously enough, since their founder made his fortune in the manufacture of high explosives, for the best work for the promotion of peace. So far not one of these prizes, though the awards have been made some three times altogether, has come to America. In medicine there are surely features of successful investigation that would deserve recognition even in such an international competition.

It must be remembered that it is entirely to American initiative that we owe the present state of our knowledge of appendicitis, one of the most important problems that any generation has had to face in medicine. Even more striking than that, however, is the American solution of the yellow-fever problem. This work was accomplished under the typical conditions for which the Nobel prizes are meant by their founder to be awarded. Only too often, here in America, scientific investigation, though this is less true in medicine than other fields, is carried on entirely with the idea of the pecuniary benefit that may be reaped from it. There was none at all of this in the yellow-fever work, and it was successfully carried through amid the most unselfish exposure of themselves to sickness and death on the part of the investigators. Probably no medical dis-

coveries made in our generation will save more lives and suffering than the results arrived at by the American medical men who solved the problem of Cuba's more than a century old scourge. Already we can point to years of freedom from the disease and a complete sense of security that replaces the unavailing terror of the past.

For the award of the Nobel prizes the names of those deemed worthy of the consideration of the committee must be presented by some scientific association or University. It has been suggested that the American Medical Association might take up this work, but in the present stress of business, due to modification of status and reorganization, such a work is likely to be delayed or neglected. It would seem more especially the duty of a select body, like the American Physicians, or of the American Association for the Advancement of Science, to take up the work of preparing the report to be made to the Nobel Prize Committee. This matter should not be longer neglected, for it seems too bad that America should not claim and obtain her place among the nations of the earth as a great scientific benefactor. The presentation of the report will be an easy matter now, and the rewards will come to those who so bravely did the work, though one of them is already beyond earthly reward, and time may further render the award abortive. This matter deserves to be taken up now.

NITROGENOUS METABOLISM.

In a recent editorial we have called attention to the influence which modern research has had in modifying the older concepts of the process of albuminous digestion, and have pointed out that there is good evidence to show that albuminous synthesis may take place beyond the intestinal barrier, and possibly in the tissues of the body at large, from substances which are much less complex in composition than the albumoses. Granted that this may be the case, it would almost follow as a matter of necessity that our concept of the process of nitrogenous metabolism also would have to be modified accordingly.

Two notable hypotheses regarding this subject have been brought forth since the time of Liebig, of which one was formulated by Voit, and the other by Pflüger. Both views are based essentially upon the assumption of an absorption of albumins from the gastro-intestinal tract, and the existence of such "circulating" albumin, in

contradistinction to that which is built up in the form of cellular protoplasm, Voit's "organized" albumin. According to Voit, then, the circulating albumin, when present in excess of a certain more or less fixed normal, is catabolized by the cellular elements of the body, but without first becoming an integral part of the latter. With Pflüger, on the other hand, the circulating albumin is largely catabolized after being transformed into bioplasm, *i.e.*, after having become an integral component of the living tissue.

Both doctrines have proven very useful as working hypotheses, but it can scarcely be said that either satisfactorily explains all the observed facts. Objections have been repeatedly raised against both, but until recently no substitute had been offered that could seriously be considered a rival. It seems to us, however, that Folin's recently promulgated theory of protein metabolism, and his researches which form the experimental basis of his theoretical deductions mark a distinct epoch in the history of the subject. Folin shows quite conclusively that there must be two forms of albuminous metabolism; one, which tends to be constant; and a second form, which is variable. The first represents the tissue or cellular metabolism proper—the *endogenous* form, while the second or *exogenous* type is intermediate.

At first sight these two forms seem to represent the older hypotheses of Pflüger and Voit, but as a matter of fact there is a wide difference. Voit and Pflüger thus both assume that albuminous catabolism takes place in the same tissues and by means of chemical processes quite similar to those which affect the decomposition of fats and carbohydrates. In other words, albuminous catabolism is regarded essentially as an oxidation, and the greatest amount of albuminous catabolism is supposed to take place, where the greatest amount of oxidation occurs, *viz.*, in the muscles. Folin points out, however, that the albuminous nitrogen exists in the form of amido or imido groups, which can be very readily removed by hydrolysis, more readily in fact than by oxidation. From this standpoint, therefore, there is no necessity for assuming that the nitrogen catabolism occurs by the same method or in the same tissues as the carbohydrate and fat catabolism. There is strong additional evidence further to show that in all probability the catabolism of the exogenous nitrogen does not occur in the muscles at all, or if so, only to a very slight

extent. Urea is only found in the muscles in traces, and other possible precursors of the substance, barring kreatin, are not present in quantities which could be considered as at all adequate to account for the amounts found in the urine. Kreatin, however, is not converted into urea in the liver, where according to generally accepted views the formation of urea largely takes place.

We are thus forced to look elsewhere for the antecedents of most of the urea occurring in the urine. It is known that during albuminous digestion ammonia is liberated through the action of the proteolytic ferments, and Nencki has shown that this portion is not utilized in the reconstruction of the albuminous molecule, since the blood coming from the intestines at the height of digestion contains two or three times as much ammonia as the blood beyond the liver. Folin draws the inference that the greater amount of albumin by far, after having been hydrolyzed to comparatively simple units, loses its nitrogen—largely in the liver—and that the non-nitrogenous residue is then transported in part to the different tissues and at once supplies material for oxidation, wherever needed, while another portion is converted into fats, or at least into carbohydrates, and then becomes subject to the laws governing the catabolism of these two groups of food products. That oxidation processes are probably at work in the transformation of the non-nitrogenous residue into carbohydrates cannot be doubted, but the removal of the nitrogen from the amido acids resulting on proteolytic digestion certainly demands no oxidation.

This in brief is an outline of Folin's recently proposed theory of protein metabolism, so far as the exogenous nitrogenous catabolism goes. Regarding the corresponding endogenous processes, in the muscle tissue at least, his researches seem to show conclusively that the catabolic processes here end with the formation of kreatin and its elimination in the urine as kreatinin. Kreatin is thus at once brought into a prominent position among the products of albuminous catabolism, while heretofore very little was known of its significance.

Folin's theory, in our judgment, is more in accord with known facts in animal metabolism than the older hypotheses of Pflüger and Voit, and bids fair to lead to far-reaching theoretical as well as practical conclusions. It readily explains the persistent tendency on the part of the organism to maintain nitrogenous equilibrium,

even when this involves the formation of excessive quantities of urea. All living protoplasm, according to Folin, is suspended in a fluid rich in albumins, and on account of the habitual use of more nitrogenous food than the tissues can use as albumins the organism is ordinarily in possession of approximately the maximum amount of reserve albumin in solution that it can advantageously retain. When the supply of food albumin is stopped, excess of reserve albumin inside the organism is still sufficient to cause a rather large destruction of albumin during the first day or two of albuminous starvation. After that the albuminous catabolism is very small, providing that a sufficient amount of non-nitrogenous food is available. But even then and for many days to follow the cellular protoplasm has still an abundant supply of albumins in solution, and the normal activity of such tissues as the muscles is not at all impaired or diminished. When 30 to 40 grms. of nitrogen have been lost by a healthy adult during a week or more of abstinence from nitrogenous food the living muscle tissues are still well supplied with all the albumins that they can use. This is indicated not only by the unchanged kreatinin elimination, but also by the fact that there is no special feeling of fatigue or inability to do our customary work. Because the organism at the end of such an experiment still has an abundance of available albumins in the nutritive fluids, it is at once seemingly wasteful with nitrogen when nitrogenous food is again ingested. This is why it only gradually, and only under the prolonged pressure of an excessive supply of food albumin, again acquires its original maximum store of this material.

This interpretation of nitrogenous equilibrium constitutes a strong reason why the so-called standard diets are unnecessarily rich in albumins, and opens up new avenues of research on the subject of nitrogenous food consumption both in health and disease.

ECHOES AND NEWS.

NEW YORK.

The Theory of Evolution.—The New York Pharmacal Association has had prepared an attractive panel on this subject, which may be had on application.

Eastern Medical Society.—The Eastern Medical Society held a concert and ball last Tuesday, March 28, 1905, at Terrace Garden. It was a marked success.

Percentages of Hospital Appointments.—In relation to a recent editorial in the *MEDICAL NEWS*, which stated that only 50 per cent. of medical graduates secure hospitals, it is interesting to note the percentages from the College of Physicians and Surgeons. In 1901 that institution placed 70 per cent. of its graduating class; in 1902 69 per cent.; in 1903 64 per cent.; and in 1904 71 per cent. The number in each class who do not try the hospital examinations is about 15 per cent., leaving only 15 per cent. who are unsuccessful.

Society of the Medical Inspectors of the City of New York.—Stated meeting of the above society will be held on Tuesday, April 4, 1905 at 8.30 P.M. sharp, at the Chemists' Club, 108 West Fifty-fifth street, Manhattan. Order of business is as follows: I. Executive session; II. Addresses by the Honorary Members of the Society: Thomas Darlington, M.D., Commissioner of Health; Hermann M. Biggs, M.D., Medical Officer; Walter Bensel, M.D., Assistant Sanitary Superintendent; John J. Cronin, M.D., Assistant Chief Inspector. III. Collation.

Recent Hospital Appointments.—The following men in the class of 1905 at the College of Physicians and Surgeons have been appointed to hospital internships: *Rochester General*, C. D. Driscoll; *Mt. Sinai*, first, H. M. Hays, J. C. A. Gerster, H. Neu-hof, A. R. Chamberlain, L. C. Kämpfer, W. J. Heimann, R. W. Pettit, J. Wansansky. Appointed as externs: R. M. Ottenberg, I. Rubin, A. E. Jaffin. *Bellevue*, first, R. R. Ryan, J. C. Mabey, G. B. Emory. The remaining three places were filled by Cornell men. *St. Catharine's*, S. E. Ryan; *Brooklyn City*, first, J. A. Bennett, W. S. Smith, M. D. Prentiss, J. J. Valentine.

Ground Broken for Manhattan Eye and Ear Institution.—Ground for the new Manhattan Eye, Ear and Throat Hospital was broken last week with appropriate exercises. The new building will be on the south side of East Sixty-fourth Street, between Second and Third avenues. The hospital is now at Park Avenue and Forty-first Street. Mrs. C. R. Agnew, widow of Dr. Cornelius R. Agnew, removed the first shovelful of earth. John Sinclair, President of the hospital, presided. Dr. Andrew H. Smith reviewed the history of the institution, and the Rev. Dr. Stephenson, of the Fifth Avenue Presbyterian Church, offered prayer.

Mount Sinai Buys Land.—The Mount Sinai Hospital has bought a plot of nearly eight lots on the south side of One Hundredth Street, directly opposite the hospital buildings which occupy the block bounded by Fifth and Madison avenues and One Hundred and First streets. Isaac Wallach, President of the Mount Sinai Hospital, said that the property had not been acquired with any view of adding immediately to the hospital's buildings, but that the Trustees had thought it advisable to secure the lots and hold them in reserve against the future needs of the institution. The lots had not been bought, Mr. Wallach said, as the result of any particular gift to the hospital, but added that a number of donations since the last annual report was published had made possible the purchase out of the general fund of the institution.

Charities Directory.—The growth of a new line of charitable activity is shown in the addition of a chapter to the 1905 edition of the *Charities Directory* published by the Charity Organization Society. This new chapter gives information of organizations which send nurses to the homes of needy persons,

as distinct from the nursing of the poor in hospitals, convalescent homes, fresh-air cottages and other institutions. There are twenty-five titles in the chapter, showing a wide variety of societies which send visiting nurses into the tenements. A large number of them are religious in character, but some of the large general societies have added visiting nurses to their staff of employees, and the Department of Health is sending nurses to the homes of consumptives to care for them and teach them means for preventing the spread of the disease to their families and neighbors. The Charity Organization Society movement shows a steady growth. Since the 1904 Directory was published about twenty new societies have been added to the roster of such organizations in the United States, making 190 in all, and the relief societies listed in Europe and Australia now total 210. Canada has seven. The Directory contains 2,000 names of societies, institutions and other charitable organizations in Manhattan Borough, about half as many in Brooklyn, and nearly one hundred in Queens. The entries include a brief description of the work of the organization named, how and where and from whom to secure its services, and the names of officers and executive employees. The book contains 675 pages. Published by the Charity Organization Society, 105 East Twenty-second Street, New York, in cloth, \$1, postpaid.

Hospitals in Straits.—That the private hospitals of New York are confronted by very serious financial difficulties, which must be remedied, was the consensus of opinion at a conference of hospital representatives held last week in the United Charities building. The conference, which was called by the Association for Improving the Condition of the Poor, was attended by representatives of every large hospital in the city and many of the smaller institutions. All admitted the gravity of the situation as shown by constantly increasing deficits in some of the hospital reports. The hospital situation which led to the calling of last week's conference was first brought to notice a year ago by Frank Tucker, in an article in *Charities*. Since then, it was said, the problem has grown worse instead of better. R. Fulton Cutting, chairman, said, in opening the meeting, that it had become so serious that the interests of the poor were gravely menaced. "One after another the hospitals are reporting enormous indebtedness," said Mr. Cutting. "Why is it? This city is the most generous in the world and its hospitals are the equal of any. What is the reason that the hospitals, which should appeal to the people more than all other charities, are supported insufficiently?" Mr. Cutting said he believed it was because the matter had not been brought properly before the public. He suggested a uniform system of accounting, so that the hospitals could compare notes of expenses and the formation of a committee to gather information and bring the public to a sense of the situation.

Mr. Tucker, who has been investigating the condition of the hospitals, said that of ten suggestions made by representatives of the hospitals whose views had been asked, that of educating the public to give more was the only one really fundamental. He advocated the creation of an independent body of men or women, chosen for their knowledge of social conditions, who should gather the facts about existing conditions, secure the adoption of a uniform system of hospital reports and educate the public on its responsibility for hospital maintenance accord-

ing to the best standards of medical and surgical science. He suggested that the cost per capita, which each hospital now has a different way of computing, should be figured out by an independent body and given to the public. The public, he said, had an idea that \$5,000 was enough to endow a bed, whereas \$20,000 was really needed to-day. Oakleigh Thorne, Treasurer of the Presbyterian Hospital, suggested monthly reports from each hospital. Isaac Wallach, of Mount Sinai Hospital, suggested that each hospital have a roll of members, such as Mount Sinai has, each of whom is pledged to give annually from \$10 up, and who should have the right to vote for officers and thus have an interest in the hospital. This plan, he said, yielded an annual income of \$120,000 to Mount Sinai. Another suggestion made by Mr. Wallach, which seemed to meet with great approval, was that the city should subsidize the hospitals in proportion to the amount each hospital contributed to the support of the sick. "I believe," said he, "that the city is not helping the hospitals as it should by the per capita per diem system as at present."

Dr. John W. Brannan, president of the trustees of Bellevue and allied hospitals, said less money would be needed if the waste in hospitals was stopped. This was the fault of the American system. In the German hospitals, where physicians and nurses were paid, attention was given to details of administration and economy by every one in a hospital. "In our hospitals," said Dr. Brannan, "our house staffs no sooner become experienced than they leave. The nurses are not paid anything, either, and are shifted about. This is all right from the standpoint of the nurses, but not for the public. The hospital is the only American institution which has not come under the modern methods of bookkeeping for finding out where every cent goes."

Dr. Brannan pointed out that the plentiful supplies of bandages and dressings encouraged in hospitals waste unknown in private practice. "Less waste and you'll get more money from the people," he observed in closing. Other representatives were in favor of the hospitals combining to make a demand on the city for a greater allowance for patients, the amount now paid, 60 cents for a medical patient and 80 cents for a surgical case per day, being, it was declared, ridiculously low as compared with the per capita case of the different hospitals. It was resolved that Mr. Cutting should name a committee of twelve to study existing hospital conditions, consider the suggestions made, and report a practical scheme of improvement at another meeting.

A Measure to be Repressed.—The medical profession must act as the osteopathic bill has been reported favorably by the Senate Committee on Judiciary—consisting of Edgar T. Brackett, chairman, of Saratoga Springs; George A. Davis, of Buffalo; Nathaniel A. Elsberg, of New York; William W. Armstrong, of Rochester; Jotham P. Allds, of Norwich; Spencer K. Warnick, of Amsterdam; Merton E. Lewis, of Rochester; George H. Cobb, of Watertown; Alfred R. Page, of New York; John Raines, of Canandaigua; Patrick H. McCarren, of Brooklyn; Jacob Marks, of New York, and Thomas T. Grady, of New York.

Dr. E. Eliot Harris, chairman of the Committee on Legislation, calls the attention of the medical profession of this State to a bill introduced in the Legislature by Senator Davis, of Buffalo, entitled an "Act Regulating the Practice of Osteopathy in the State of New York," and asks that the members of the Senate and Assembly

be petitioned in the interest of individual and public health to defeat the osteopathic bill for the following reasons:

To summarize the objections to the osteopathic bill: *First.* Osteopathy, so-called, is an agent or method used in the treatment of disease, and is included in the general practice of medicine.

Second. Osteopathy should not be made a special branch of medicine by an act of the legislature, but should come under the present State laws, which govern all the special branches as well as the general practice of medicine. Any licensed physician has now the right to practice osteopathy as a specialty.

Third. The legislature should protect the public by denying the endorsement of the State to any person, as being capable of treating the diseases of the human body, unless such person can make a diagnosis of the condition of the human body, to do which requires a full knowledge of the science of medicine as taught in the medical colleges of this State, including the use of drugs and other valuable therapeutic agents.

Fourth. If the so-called osteopathic bill becomes a law, all candidates who fail to pass the Regents' examinations to obtain a license to practise medicine in this State may, in this State, treat all diseases of the human body by holding a diploma from any regular osteopathic college in the United States, a privilege which would lower the standing of this State in the educational world.

And finally, it would be more reasonable for the legislature to separate the special branches of criminal, corporation, and real estate law from the general practice of law and establish for each of them a special examining board, so as to make it easier for the candidates for admission to the Bar who desire to practice as specialists, than it would be for the legislature to select one special therapeutic agent used in the treatment of disease and separate it from the general practice of medicine as a panacea for all diseases at the request of those enthusiasts who now ask for a special osteopathic examining board.

PHILADELPHIA.

Donation Day.—On last Saturday the Sisters of St. Francis received donations at the St. Mary's Hospital.

Bill Passed.—After a somewhat concise speech, in which Mr. Plummer told the legislature of the advantage of consumptive camps, this body passed the bill appropriating \$400,000 to establish and to maintain two such camps.

Charity Ball Profits Divided.—According to the secretary of the German-American Charity Ball Committee, the profits of the ball, held February 6, were \$2,310.54, which sum will be divided equally between the Hahnemann and the Children's Homeopathic hospitals.

Neurological Society Entertained.—Dr. Charles K. Mills entertained 75 members and friends of the Charles K. Mills Neurological Society of the University of Pennsylvania March 24. Among the guests the following physicians were noted: Drs. Hearn, Keen, Dercum, Frazier, Clark, Spiller, Potts, Turnbull, Marshall, Hirst, Pickett, Lloyd and Deaver.

Hospital Quarantined.—For three hours the Medico-Chirurgical Hospital was placed under quarantine owing to the fact that a case of smallpox got into the receiving ward. The case was sent to the Municipal Hospital and the ward was fumigated. Several of the nurses who attended the patient were isolated. The source of the infection is not known,

but it is the purpose of the hospital authorities to determine if possible how it arose.

Doctor's Reports on Public School Visits.—The weekly reports of the physicians of the Bureau of Health show that last week 319 schools were visited and 4,601 pupils examined. Thirty-three required vaccination, 207 suffered from defective vision, 11 from defective hearing, 7 from defective speech and 70 from defective teeth. In the industrial schools 927 children need to be vaccinated.

The Spread of Meningitis to be Prevented.—Orders have been issued to Vare Brothers directing them to clean the streets at once. Dr. Martin claims that the streets are filthier now than they have been for years, and particularly in that portion where the greater number of cases have developed, viz., the section bounded by Broad Street on the west, Delaware River on the east, Spruce street on the north and Washington Avenue on the south.

College of Physicians gets Bureau of Health's Library.—These books were taken to that institution, where they will be known as the "Abbott Collection." The collection contains 250 volumes which were gathered by Dr. W. H. Ford, who had been president of the Board of Health for thirty years. It contains the report on the cholera epidemic in 1873 and the report of the Bureau of Agriculture on the swine plague of 1884. Dr. Martin will issue a permit to any physician who wishes to consult the collection.

Hahnemann Hospital's New Clinic.—On March 20 Mrs. George D. Widener presented to the Hahnemann Hospital a new clinic amphitheater, which she erected in memory of her father, the late William L. Elkins. As a preface to his first clinic in this new structure, Dr. William B. Van Lennet described the building to the student body and pointed out the various rooms and their purpose. He laid considerable stress upon the fact that they now have two private wards where patients can be taken to recover from the anesthetic.

Pharmacists Meet.—At a meeting held at the College of Pharmacy the following papers were read: "Ethical Pharmaceutical Practice and its Recompense," by Prof. Henry P. Hynson, of the University of Maryland; "Professionalism Versus Commercialism in Pharmacy," by Dr. William C. Alpers; "The Evolution of Nostrum Vending and its Relation to the Practice of Medicine and Pharmacy," by George M. Beringer, Ph.M. Prof. J. P. Remington, who presided, told of an attempt made to pass a bill requiring applicants to graduate from a reputable college of pharmacy as a prerequisite for examination.

Section on Ophthalmology of the College of Physicians.—This Society met March 21. The scientific program was opened by Dr. S. D. Risley, who read a paper on "Unusual Changes in the Refraction of the Eye." Dr. John T. Carpenter read one on "Epiphora Unassociated with Laryngeal Obstruction." The next paper presented was that of Dr. de Schweinitz upon "Metastatic Ophthalmitis following Labor, with Histological Examination of the Specimens." Dr. Veasey read the last paper; it was upon "Recovery, with Useful Vision, from a Severe Nitric Acid Burn involving the whole External Portion of the Eyeball."

Surgeons to Check Idiocy.—The legislature has passed a bill the text of which is as follows: "On the first of July after the passage of this bill it shall be compulsory for every institution intrusted exclu-

sively or especially for the care of idiots and imbecile children to appoint at least one skilled neurologist and one skilled surgeon to its staff. In conjunction with the physician it will be the duty of these men to examine the mental and physical condition of the inmates. If, after one year's test at the institution, there is no evidence or prospects of improvement, in the minds of these experts, it shall be lawful to operate upon idiots in order to prevent procreation."

Pathological Society.—The society held its regular meeting March 23, at which Dr. E. A. Shuman exhibited "Malignant Tumors of the Ovaries." Dr. W. M. L. Coplin read a paper on "Acute Pulmonary Edema." He showed a rabbit in which edema was produced by the injection of solution of adrenalin. He also exhibited a specimen of a dissecting aneurism in the aorta of a rabbit which had received adrenalin chloride. Dr. D. J. McCarthy read a paper on "Abnormal Types of Nerve-cell Degeneration." He also showed two specimens illustrating "Hemorrhagic Conditions of the Cerebrum."

The American Society of Tropical Medicine.—This society held its annual scientific meeting March 24. The Panama Canal Zone was the subject under discussion. Dr. Seneca Egbert read a paper on "The History of the Republic of Panama and the Panama Canal." Dr. Joseph McFarland gave an illustrated lecture on the "Canal Zone." Dr. Roland G. Curtin read a paper on "The Medical Conditions of the Isthmus of Panama." The discussion was to be opened by Dr. Samuel D. Risley and Dr. W. W. Keen, but both were absent. At the business meeting Dr. Roland Curtin was elected president of the society, Dr. Joseph McFarland secretary, Dr. John M. Swan assistant secretary, and Dr. Sinkler treasurer.

Philadelphia County Medical Society.—This society held a meeting March 22 on a Symposium of Pneumonia. Dr. Thomas Darlington, Commissioner of Health of New York, was scheduled to speak first, but being unavoidably delayed his talk was postponed until later in the evening. Dr. W. T. Longcope read a paper on "Some Recent Developments in the Etiology and Pathology of Pneumonia." Dr. J. C. Wilson read the "Symptomatology and Diagnosis of Atypical Forms of Pneumonia." Dr. H. A. Hare prepared a paper on "The Medical Treatment of Pneumonia." He was unable to attend but sent his paper, which was read by Dr. Landis. In the absence of Dr. R. H. Harte, Dr. John Gibbon outlined the "Surgical Treatment and Complications of Pneumonia." The discussion on these papers was opened by Dr. John H. Musser; he was followed by Dr. John B. Roberts. The following also took part in the discussion: Dr. Tyson, Dr. Deland, Dr. Woodberry and Dr. Anders.

CHICAGO.

Hospital Beneficiaries.—St. Luke's, Mercy, Alexian Brothers' and the Chicago Presbyterian Hospital have each been bequeathed \$2,000 by the will of the late John Murphy.

Brokaw Hospital Beneficiary.—By the terms of the will of Abram Brokaw, the eccentric millionaire of Bloomington, Ill., the hospital in that city which bears his name will receive \$175,000.

Memorial Tablet to Dr. N. S. Davis Unveiled.—A memorial tablet to the late Dr. N. S. Davis was unveiled March 24, in Davis Hall of the Northwestern University Medical School. Addresses were de-

livered by Drs. Geo. W. Webster, E. Wyllys Andrews, E. C. Dudley, W. O. Krohn and Dean Holgate, of the University. The tablet was presented by the senior medical class of the school.

Crime.—Figures have been compiled by Dr. F. H. Wines, former secretary of the Illinois Board of Charities, and a statistician of note, which show that the belief that crime is widespread in the United States and is increasing in proportion to the population is not true of Chicago. In 1880, when Chicago had a population of 503,181, there were 24,480 arrests here, or 487 to every ten thousand people. In 1890, when the population was 1,099,850, the number of arrests was 62,230, or 566 to every ten thousand people. In 1900, when the population was 1,698,575, there were 70,439 arrests, or 415 to every ten thousand people. Dr. Wines' analysis of his figures shows that, in proportion to population, the number of petty crimes in Chicago decreased 66 per cent., and the number of serious crimes 50 per cent. between 1890 and 1900.

GENERAL.

Departure of Dr. Cushny.—Dr. Arthur R. Cushny, professor of materia medica and therapeutics in the department of medicine and surgery at the University of Michigan, left New York last week on his way to Europe, to take a similar chair in the University of Medicine in London. Dr. Charles W. Edmunds has been chosen to take charge of his work at the University of Michigan.

Honor System at Michigan.—All examinations in the medical department of the University of Michigan are conducted on the "honor system." Each class in its first year adopts the plan and adheres to it throughout the four years' course. The operation of the plan relieves the examiner from guard duty over his class and puts each student on his honor not to give or receive aid in writing his paper. All accusations of dishonesty are investigated by a student committee which recommends to the Faculty whatever action is in its judgment required by the nature of the offense.

Congress of French-Speaking Alienists.—The fifteenth congress of the alienists and neurologists of France and French-speaking countries will be held this year at Rennes, from August 1 to 7, under the presidency of Dr. A. Giraud, Medical Director of the Lunatic Asylum of Saint-Yon in the Seine-Inferieure Department. The following are the questions proposed for discussion: (1) Hypochondriasis, (2) forms of ascending neuritis, (3) baths and hydrotherapy in the treatment of mental diseases. Communications should be addressed to the General Secretary, Dr. J. Sizaret, Médecin en chef de l'Asyle Public des Aliénés de Rennes.

Dartmouth Medical School.—Definite plans are rapidly progressing whereby a practically new medical school will be created to replace the old school, which dates from 1798, when Dr. Nathan Smith was made professor of medicine at Dartmouth College. The first step toward this end will be the erection this summer of a building of large and handsome proportions facing the south adjoining the present one. The proposed cost of the new building is \$30,000, a large proportion of which has already been raised among the alumni. The laboratories will be open to all students, and special efforts will be made to give a thorough, up-to-date training in modern medicine. The courses of instruction will be the same as at present, but special attention will be given

to the theory and science back of these courses. The medical school will also offer in connection with the summer school a course of graduate instruction, open to all physicians.

Boston Medical Library Meeting in conjunction with the Suffolk District Branch of the Massachusetts Medical Society.—The last meeting was held at the Library March 22. Dr. Geo. G. Sears was in the chair. Dr. H. F. Hewes read a paper on "A Study of the Objective Methods of Diagnosis of the Stomach in a Medico-Surgical Clinic with Report of Cases." Dr. Hewes went over in detail the routine treatment of stomach cases in his clinic during the past six months, especially as regards the early diagnosis of cancer and ulcer of the stomach. In these two conditions the question as to the presence or absence of stasis, dilatation, malformation and malposition of the stomach, blood, lactic acid, hyper- or hypoacidity and bacteria and yeasts was to be determined. The methods used to determine these things were described, especially the guaiac test for blood, somewhat discredited in this country, and the correct test for lactic acid by means of an ether solution of stomach contents and ferric chloride. The value of the study of sediments obtained in gastric contents and what could be learned from the presence or absence of various bacteria and cells was emphasized. In making a diagnosis it was the grouping together of certain findings rather than the presence of any single one of them which was of value. As regards results, out of about 18 cases diagnosed as cancer previous to operation or autopsy, all were found to be correct; 12 cases were diagnosed as gastric ulcer; at operation 10 were found to be ulcer, one a cancer and one perigastric adhesions. The paper was of great interest and emphasized a very important and rather neglected part of a routine physical examination. Dr. J. G. Mumford spoke on "The Recent Surgical Conceptions of Non-Malignant Disease." He showed as well as was possible, by means of a table prepared from stomach operations based on statistics from such men as Mayo, Moynihan, Munro and others, the immediate and end results of operations for the purpose of draining the stomach in non-malignant cases. The time was altogether too short in the great majority of instances to get any real idea of end results. Although a great many operations had been done, men either reported them at once without waiting for results or else did not report them at all, or without sufficient detail to be of value. In his own experience the reader found Finney's operation to be the best. The others were described and discussed.

Dr. Bottomley spoke for Dr. Munro and himself, stating the results in their cases. He rather took the ground that the time was coming when chronic indigestion or dyspepsia would prove to be a surgical condition.

Dr. F. B. Lund described his experience in stomach surgery, and spoke of the great relief given to most hopeless and distressing cases.

Dr. E. P. Joslin emphasized the fact that in gastric ulcer, treated medically, the end results were far better in private practice outside a large hospital than in one. He thought too much was left to house officers in these cases.

Preliminary Program of the Medical Association of Georgia.—The fifty-sixth annual session will be held at Atlanta, Ga., April 19, 20 and 21, 1905. The following papers are announced: "The Doctor and

the Public Schools," by Theo. Toepel, M.D., of Atlanta; "Bromide Poisoning," by C. C. Stockard, M.D., of Atlanta; "Occult Hemorrhage, Its Diagnostic Value in Cancer and Ulcer of the Stomach," by L. Amster, M.D., of Atlanta; "The Cause and Treatment of Lacrimal Stenosis in Infants," by Dunbar Roy, M.D., of Atlanta; "X-rays in External Treatment," by M. B. Hutchins, M.D., of Atlanta; "Journals for Revenue Only," by Ralph M. Thomson, M.D., of Savannah; "Corneal Abscission," by J. M. Crawford, M.D., of Atlanta; "La Grippe," by J. W. Palmer, M.D., of Ailey; "Croup and Membranous Croup," by S. Visanska, M.D., of Atlanta; "Some Points out of my own Experience in Refraction and the Fitting of Glasses," by Ross P. Cox, M.D., of Rome; "Is Bilateral Operation for Cataract Ever Justifiable; if not, How Soon After Operation on the First Eye is it Safe to Extract the Second Cataract?" by A. W. Calhoun, M.D., of Atlanta; "The Modern Application of the Galvano-Cautery, with Some of Its Uses and Abuses," by A. G. Hobbs, M.D., of Atlanta; "Recurrent Ocular Paralysis with Pain," by A. W. Sterling, M.D., of Atlanta; "The Physician's Duty to the Pregnant Woman," by Jno. W. Daniel, M.D., of Savannah; "Appendicitis, Medical and Surgical," by R. R. Kime, M.D., of Atlanta; "Medical and Surgical Hodge-Podge," by W. B. Hardman, M.D., of Commerce; "The Mode of Infection in Uncinariasis," by Claude A. Smith, M.D., of Atlanta; "Character in a Physician is Like Beauty in the Statue; it asks for Infinite Pains," by E. Morgan, M.D., of Arlington; "The Prompt Repair of Laceration of Female Generative Organs After Labor," by E. C. Davis, M.D., of Atlanta; "Prevention and Treatment of Puerperal Infection," by L. C. Fischer, M.D., of Atlanta; "Report of Cases of Tuberculosis Treated with Bacillus X (Maher)," by T. E. Oertel, M.D., of Augusta; "Report of Case of Myasthenia Gravis," by J. Cheston King, M.D., of Atlanta; "Pneumonia, its Etiology, Pathology and Treatment," by A. C. Davidson, M.D., of Sharon; "Albuminuria," by E. B. Block, M.D., of Atlanta; "Diagnostic and Therapeutic Importance of the Recent Advances Made in the Examination of the Feces," by H. F. Harris, M.D., of Atlanta; "The Clinical Consideration of Tumors," by W. F. Westmoreland, M.D., of Atlanta.

The Medical Society of London.—The one hundred and thirty-second anniversary dinner of the Medical Society of London was held at the Whitehall Rooms, Hotel Metropole, on March 15, with the President, Mr. J. Langdon, in the chair. To the right of the chairman were seated the President of the Royal College of Physicians, the Principal of the University of London, the President of the Clinical Society, the Dean of the Faculty of Medicine of the University of London, the President of the Harveian Society, the President of the Gynecological Society, the President of the West London Medico-Chirurgical Society, and to the left of the chairman the President of the Royal College of Surgeons, the Director-General of the Army Medical Service, the President of the Royal Medical and Chirurgical Society, the President of the Neurological Society, the President of the Hunterian Society, the President of the Obstetrical Society, the President of the Laryngological Society, and the President of the Society of Anesthetists. After the usual loyal toasts had been duly honored, Sir William S. Church proposed the toast of "The Medical Society of London." He observed that there was in the air much

talk of a scheme whereby the various medical societies in this metropolis would be more or less confederated together. He trusted that the individual societies would still retain their individuality. In any such movement, the Medical Society was bound to take a leading part. Mr. Langton, in responding to this toast, referred to the Lettsomian Lectures given by Dr. Savage, and to the address on the Growth of Cancer by Dr. Bashford. Sir A. W. Rücker, in replying to the toast of "The Guests," proposed by Dr. F. de Haviland Hall, said that the number of students of medicine in the metropolis, instead of increasing, had been for some years falling off, owing to the fact the new provincial schools provided excellent classes for preliminary medical subjects. London must certainly put itself on an equality with the provinces. London had so many great medical schools and such an extraordinary wealth of teaching material that instruction in preliminary medical subjects in the metropolis must be put on a higher footing. These subjects did not require to be taught in the immediate neighborhood of the sick bed, and it was a matter of the greatest importance that there should be established a central medical institution where physics and chemistry, and probably also anatomy and physiology, could be taught. That would do something to put the teaching of these subjects in the metropolis on an equality with the provincial centers, and with the greatest medical institutions in the capitals of the world. He concluded by reminding his hearers that that could only be done with the help of the medical profession. Mr. Tweedy also responded to this toast, and said he was glad to have the opportunity of acknowledging the benefits he had derived from the excellent library of the Medical Society. Sir Constantine Holman proposed the health of "The President," and that gentleman, in acknowledging the toast, paid a high compliment to the efforts of the two honorary secretaries of the Medical Society, Mr. Waring and Dr. Risien Russell, to whom he attributed the great success of the evening.

Physician (Female) for Government Hospital for the Insane.—The United States Civil Service Commission announces an examination on April 26 to 27, 1905, to secure eligibles from which to make certification to fill a vacancy in the position of physician (female) in the Government Hospital for the Insane, Washington, D. C., at \$1,500 per annum and quarters, and vacancies as they may occur in any branch of the service requiring similar qualifications. Only unmarried women will be admitted to this examination. The examination will consist of the subjects mentioned, valued as indicated: 1. Letter-writing (a letter of not less than 150 words on one or two subjects given), 5; 2. Anatomy and physiology, 5; 3. Chemistry, materia medica, and therapeutics, 10; 4. Bacteriology and hygiene, 10; 5. Surgery and surgical pathology, 15; 6. Obstetrics and gynecology, 15; 7. Mental diseases, 20; 8. Experience (rated on application), 20. Applications will be received from graduates of recognized medical schools. Credit will be given for experience obtained in a professional capacity in institutions for the care of mental diseases, in general hospitals, and in the actual performance of surgical operations and the care of operative cases. Two days will be required for this examination. Age limit twenty-five to forty years on the date of the examination. This examination is open to all citizens of the United States who comply with the requirements. Applicants should at

once apply either to the United States Civil Service Commission, Washington, D. C., or to the secretary of the board of examiners at any place mentioned in the accompanying list for application Form 1312. No application will be accepted unless properly executed and filed with the Commission at Washington. In applying for this examination the exact title as given at the head of this announcement should be used in the application. As examination papers are shipped direct from the Commission to the places of examination, it is necessary that applications be received in ample time to arrange for the examination desired at the place indicated by the applicant. The Commission will, therefore, arrange to examine any applicant whose application is received in time to permit the shipment of the necessary papers.

Florida Medical Association.—The thirty-second annual meeting will be held at Jacksonville, Fla., April 19, 20 and 21, 1905. The following papers will be read: "Double Tubal Pregnancy, a Unique Case," with specimens, by Dr. Edward N. Liell, of Jacksonville; "Medical Legislation," by Dr. J. Harris Pierpont, of Pensacola; "Personal Experiences with Asiatic Cholera," by Dr. A. D. Williams, of Jacksonville; "Typhoid Fever in Small Towns and Rural Communities—Treatment," by Dr. Albert H. Freeman, of Starke; "Typhoid Fever," by Dr. H. R. Drew, of Jacksonville; "Feeding in Typhoid Fever," by Dr. W. L. Hughlett, of Cocoa; "Sulpho-Carbolates in the Treatment of Typhoid Fever," by Dr. P. J. Stollenwerck, of Jacksonville; "Southern Fevers," by Dr. Wallace, of Ormond, Fla.; "Intestinal Parasites, Blood Findings, Diagnosis and Treatment," by Dr. Charles E. Terry, of Jacksonville; "Malarial Hemoglobinuria," by Dr. L. A. Greene, of Greenville, Fla.; "The Etiology of Choroiditis," by Dr. Columbus Drew, of Jacksonville; exhibit of a large pulmonary calculus, a lime concretion, coughed up by a patient, with remarks and history of case, by Dr. W. L. Hughlett, of Cocoa; "The Causation and Result of Enucleation of the Eye;" "Effect of the Galvano-Cautery in a case of Deaf-Mutism," by Dr. F. P. Hoover, of Jacksonville; "Eye Strain, a Frequent Cause of Headaches and Nervous Derangements," by Dr. J. Harrison Hodges, of Gainesville; "The Mosquitoes of Florida," by Dr. Hiram Byrd, of Kissimmee; "Antiseptics and Disinfectants, Facts Substantiating and Disproving Claims Made by Manufacturing Chemists," by Dr. H. S. Holloway, of Jacksonville; "Laudry's Paralysis," (acute ascending paralysis) by Dr. John R. Ham, of Malabar; "The X-ray in Malignant Growths, and in other Pathological Conditions," by Dr. C. M. Greiner, of Jacksonville; "Surgical Obstetrics," unusual high temperatures, with report of cases, by Dr. Frederick Meagley, of Daytona; "Medicine, the Pioneer of Surgery," by Dr. F. D. Miller, of Jacksonville; "Radical Treatment of Hydrocele," with report of cases, by Dr. John McDiarmid, of Deland; "A Case of Filaria Sanguinis Hominis;" "Metastatic Gonorrheal Ophthalmia," by Dr. E. Andrade, of Jacksonville; "Changes Necessary to Bring Surgery Up to Date in Florida," by Dr. C. P. Rogers, of Jacksonville; "Peri-Urethral Abscess," by Dr. Fred Bowen, of Jacksonville; "Fractures of Lower End of Humerus, with Treatment," by Dr. N. A. Upchurch, of Jacksonville; paper by Dr. DeWitt Webb, St. Augustine, subject to be announced.

An American Medical Poet.—In *Medicine* for March there is an interesting account of an American medical poet whose name, writes the *British*

Medical Journal, we imagine, will be as new to most of our readers as we confess it was to us. James Gates Percival was born in 1795, and after taking an arts degree at Yale was for some time engaged in teaching. He then studied medicine, and after graduating at Philadelphia entered the United States army as assistant-surgeon. He was for some time Professor of Chemistry at the famous military academy at West Point. Apparently he left the service to devote himself to scientific research, for he made a geological survey of Connecticut, in the course of which he walked over every hill, plain and morass in the State. In this work he was engaged for five years at an annual salary never exceeding \$60. In addition to his scientific knowledge, he was a linguist, reading with ease Latin, Greek, French, Spanish, German, Italian, and the Slavonic languages. But he was utterly wanting in the power of self-assertion; hence his great gifts were hidden from the world. His first efforts in verse were damned by the American press as brutally as were those of Keats by the *Quarterly Review*. If he was not, like the author of *Endymion*, killed off by one critic, the reviewers wounded his sensitive spirit so deeply that he tried to kill himself. Yet the workmanship of his verse was so fine that it earned praise from so severe a judge as Edgar Allan Poe. In addition to metrical translations of Geyman and Slavonic lyrics, Percival published several small volumes of original poems between 1821 and 1843, and a complete edition appeared in 1859. Throughout his life he was a prey to the poverty which used to be the proverbial lot of poets. Hunger forced him to play the part of literary "ghost." He is said to have been the sole author, compiler, and editor of the first edition of the *Unabridged Dictionary* published in the name of Noah Webster, in which he gave not only the definition but the root and the history of some 16,000 words derived from thirty-nine languages, of all of which he had some critical knowledge. Webster's first dictionary was merely a compilation from standard authorities, the only original part consisting in American slang. It is to Percival that Webster owes his fame as a lexicographer. At last, in the decline of his life, fortune seemed disposed to smile on the doctor-poet. In 1854, through the influence of some friends who knew his worth, Percival was appointed Geologist to the State of Wisconsin. His first report was published in 1855, and he was engaged on the second at the time of his death. If it be asked what caused the failure of a man so brilliantly endowed, so versatile in accomplishment, and so strenuous in work, we think the answer may be given in two words—diffidence and instability. Samuel Johnson said: "Slow rises worth by poverty deprest." But many have fulfilled their destiny and uttered the message that was in them, in spite of poverty. There is a wise old saw, "Primum vivere deinde philosophari." James Gates Percival, we take it, was one of those who find it more easy to philosophize than to live.

Special Trains to Portland, Ore.—Arrangements have been completed under which the Northern Pacific Railway will run three solid special trains through to the Pacific coast for physicians who will go West early in July to attend the coming sessions of the American Medical Association, the national organization of doctors. The first special will run through from Chicago, leaving June 30 and reaching St. Paul July 1, proceeding West and stopping at Gardiner, Mont., for a five and one-half day tour of the Yellowstone National

Park. A second solid special train will leave Chicago July 1, reaching St. Paul July 2, and proceeding West to Gardiner for a similar tour of the Yellowstone. A third special train will leave Chicago July 6, running through to Portland with stops at several important points. The Northern Pacific has been designated the official route for the handling of the physicians, and the national officers will go West on one of the first two specials, in both of which accommodations are very nearly exhausted. Arrangements are now being made by numerous small parties for space in the third special, and it is possible that additional trains will be arranged for, if the demand for reservations continues heavy. Each special will be made up of standard Pullman equipment, with through dining cars and ample baggage accommodations. Every facility which adds to luxurious comfort en route is being arranged for and the train schedules have been worked out with especial reference to the convenience of the doctors. The third special will arrive in Portland the morning before the convention opens. Especial attention is called to the fact that berth reservations should be made immediately through C. A. Matthews, General Agent Passenger Department, N. P. R., Chicago. The best service can be afforded if the physicians will co-operate in this matter, arranging their plans accordingly.

Dr. Matas Honored.—An event of interest and no small note was quietly celebrated at the residence of Dr. Rudolph Matas, in New Orleans, last week, when a body of physicians, professors and students and intimate friends called at the Matas home and presented him with a beautiful silver service, consisting of some 125 pieces, and a handsome solid silver loving cup. These tokens of honor and esteem were presented to Dr. Matas on the twenty-fifth anniversary of his graduation from Tulane Medical School and his entering upon the active practice of medicine. The whole thing was a complete surprise. Dr. Stanford E. Chaille, Dean of the Medical College, made the presentation in one of his best and neatest efforts. Dr. I. L. Leucht, Rabbi of Touro Synagogue, seconded the presentation of Dr. Chaille, and then Dr. Matas responded in words of tenderest appreciation. He was so overcome by this loving remembrance of the day that he spoke with difficulty at the beginning of his remarks. These pleasing ceremonies occupied a half hour or more. Then Mrs. Matas took charge of the welcome guests and a dainty repast was served. "To-day," said one of the Faculty of Tulane, who assisted in the affair, "marked the twenty-fifth anniversary of Dr. Matas' graduation. His service to the medical profession since his leaving Tulane have been of such lasting value to science and the medical world that we, as members of the Faculty, students, professional men, and, above all, as personal friends, took this simple means of showing some mark of our love and appreciation." The large chest of silver rested on a table under the folding doors of the parlor while the presentation was being made. It is one of the most beautiful, and at the same time the most useful, ever presented on any occasion in this city. The loving cup was also of a most beautiful design and creation.

The Medical Department of the United States Army.—The *New York Sun* has the following excellent commentary on the situation:

"The Medical Department of the army is yet without relief. The *Journal of the American Medical Association* says: 'The responsibility for the failure of the bill introduced last session to increase the efficiency of this branch of the public service rests with the Speaker of the House, who at the last moment refused to per-

mit the measure to come to a vote.' The petition of the American Medical Association, one of the most influential bodies in the United States, branch societies of which are organized in every Congress district in the Union, as well as the personal solicitation of the Secretary of War and the still further formal declaration of the President that 'if the Medical Department of the army is left as it is, no amount of wisdom or efficiency in its administration will prevent a complete breakdown in the event of a serious war,' were of no avail against the views of the practical politician. Nothing but the ruling of the Speaker stood in the way of this vitally important bill. It had passed the Senate, the President was heartily in its favor and a majority of the House were ready to vote for it. Now it will have to bide its time and await the convenience of the Speaker and the party in power. We do not expect a war, but it is the unexpected that happens; and should war come we shall be no more prepared for it than at the time of the rupture with Spain. We are too apt to forget the disasters for which our shortcomings were then responsible and to remember only the triumph in arms in that short conflict. The recent report of the Typhoid Fever Board, appointed to investigate the sanitary conditions of the United States Army in that period, showed that 90 per cent. of the volunteer regiments developed typhoid fever within eight weeks after going into camp. There were 20,730 cases of this single disease, with a death rate of 7.61 per cent., and this mortality ratio takes no account of the loss from all other diseases. Where strict discipline prevails and where efficient medical organization is in authority, there would be no typhoid epidemics; in fact, no epidemics of any kind. The death rate from disease would be reduced to the minimum and the efficiency of the fighting line would be practically intact except for injuries received in battle. Such are the results obtained in the army of Japan, in which the organization of the Medical Department has reached a degree of perfection never before attained by any nation. That Medical Staff is in touch with the commanders of the various armies in camp and in the field, it is thoroughly equipped, and in all things pertaining to sanitation the surgeon's word is supreme. Some idea of the value of the service to humanity which the Army Medical Staff may perform may be gained by reference to the work of the late Walter Reed, Major and Surgeon, U. S. A., who died in 1902. The investigations of this remarkable man, assisted by Surgeon W. C. Gorgas, who is now in charge of the Medical Department of the Canal Zone, not only removed yellow fever from the city of Havana, where it had had an uninterrupted habitat of a century, but wiped it from the list of epidemics which had often carried death to our seacoast cities and paralyzed for months at a time the commerce of the Atlantic coast. These same results will follow in the Canal Zone if Major Gorgas has proper authority and is furnished with the facilities for carrying out the plan with which he became so familiar during his experience in Cuba. It is a disgrace of our nation that year after year the Medical Department of the Army should appeal in vain to Congress for permission to make itself equal to the protection of our soldiers. The Congressmen who fail to provide this relief should be held to strict accountability."

President to Naval M.D.'s.—President Roosevelt last Saturday attended the graduation exercises of the United States Naval Medical School, held at the Naval Museum of Hygiene. Twenty-three assistant surgeons were graduated. The President delivered the diplomas

and made an address. He said: "Ladies and gentlemen, and especially the members of the graduating class: I am glad to have the chance of saying a word of greeting to you this morning. You represent two professions—for you are members of the great medical body, and you are also officers of the navy of the United States, and, therefore, you have a double standard of honor up to which to live. I think that all of us laymen, men and women, have a peculiar appreciation of what a doctor means; for I do not suppose there is one of us who does not feel that the family doctor stands in a position of close intimacy, in a position of obligation under which one is happy to rest to an extent that hardly any one else can stand, and those of us who, I think most of us, are fortunate enough to have a family doctor who is a beloved and intimate friend, realize that there can be few closer ties of intimacy and affection in the world. And while, of course, even the greatest and best doctors cannot assume that very intimate relation with more than a certain number of people, it is to be said, I think, that more than any other man, except a few clergymen, the doctor does commonly assume that relation to many people. While, nevertheless, it is impossible that that relation shall obtain between a doctor and more than a certain number of people, still with every patient with whom the doctor is thrown at all intimately he has that relation to a greater or less extent. Just as the great doctor, the man who stands high in his profession in any city, counts as one of the most valuable assets in that city's civic work, so in the navy or the army the effect of having thoroughly well trained men with a high and sensitive standard of professional honor and professional duty is well nigh incalculable upon the service itself. I want you now as you graduate to feel that on your shoulders rests a great weight of responsibility, that your position is one of high honor and that it is impossible to hold a position of high honor and not hold it under penalty of incurring the severest reprobation if you fail to live up to its requirements. I am not competent to speak save in the most general terms of your professional duties. I do want, however, to call your attention to one or two features connected with them. In the first place, in connection with the work you do for the service you have certain peculiar advantages in doing work that will be felt for the whole profession. For instance, it will come to your lot to deal peculiarly with certain types of tropical diseases. You will have to deal with them as no ordinary American doctor, no matter how great his experience, will have to deal with them, and you should fit yourselves by most careful study and preparation, so that you shall not only be able to grapple with cases as they come up, but in grappling with them to make and record observations upon them that will be of permanent value to your fellows in civil life. You can do what no civilian doctor can possibly do. There probably is not a branch of the profession into which, during your career, you will not have to go; no type of disease that you will not have to treat. But there are certain diseases that you will have to treat that the ordinary man who stays at home of course does not, and it is of consequence to the entire medical profession that you should so fit yourself by study, by preparation, that you shall not only be able to deal with those cases, but to deal with them in a way that will be of advantage to your stay-at-home brethren. There is one other point. Every effort should, of course, be made to provide you with ample means to do your work. Every effort ought to be made to persuade the National legislature to take that view

of the situation; to remember that in case of war it is out of the question to improvise a great medical service for the army and navy. The needed increase is more keenly felt in the army than in the navy, because it is always the army that undergoes the greatest expansion. But it is felt in both services. If a war come for which we have no greater preparation than at present we have made, if, as is perfectly certain to be the case, there be fever in the camps; if there be trouble among the volunteer forces, it is foolish to the greatest degree for the public men, and especially for the public press, to complain and shriek over the people who happen to be in power at that time. Let them shriek—or, rather, do not let them shriek at all, for shrieking is a sign of hysteria—but let them solemnly think over and repent of the fact that they have not made their representatives provide adequately in advance for the medical system in its personnel, its material, its organization and physical instruments necessary to make that organization effective, which alone, if prepared in advance, will obviate the trouble which otherwise is certain to come if we have a war. Let them remember not to blame the people in power when the breakdown comes, but blame themselves—the people of the United States—because they have not had the forethought to take the steps in advance which will prevent that breakdown occurring. Means ought to be provided. That is part of our duty. If we fail in it, then it is our responsibility, not yours. But, and this I want to impress with all the strength that in me lies upon every medical man in either the army or the navy, remember always that in any time of crisis the chances are that you will have to work with imperfect implements. And you can form a pretty good test of your worth. If you sit down and say you could have done good work if only you had had the right implements to work with you will show your unfitness for your position. Your business, then, will be to do the very best you can do if you have got nothing in the world but a jackknife to do it with. Keep before your minds all the time that when the crisis occurs it is almost sure to be the case that you will have to do no small part of your work with makeshifts; to do it, as I myself saw at Santiago the army physicians, roughly and hastily and with but one-fourth or one-fifth of the appliances that he would expect normally to have, and then, as I say, make up your mind that while you have done all you can to get the best material together in advance, that you will not put forward the lack of that material as an excuse for not doing all the work you have to do upon the imperfect tools. Make it a matter of pride to get the best possible use out of them. I greet you on your entrance into the service. I welcome you as servants of the nation, and I wish you every success in the great and honorable calling which you have chosen as yours."

OBITUARY.

Dr. F. B. WHITING, Surgeon-General of the Grand Army of the Republic, died March 27.

Dr. JOHN P. LOMBARD died last week at his home in Boston from heart disease. He was born at Medford, Nova Scotia, February 14, 1861, and was graduated from the New York University Medical School in 1887.

Dr. RICHARD H. SULLIVAN died last Monday at his home in Brooklyn. He was fifty-one years old, and had practised his profession in that borough for more than twenty years. He was a member of the Union League Club and the Kings County Medical Society.

Dr. WILLIAM C. DETWEILER, a well known citizen of Easton, Pa., died suddenly on Wednesday night

last. He was talking with his wife about the sudden death of the Rev. David Harbisch in the morning, when he became ill of paralysis of the heart, expiring in a few minutes. He was seventy-four years old.

Dr. FREDERIC DANNE, a retired physician, died last Monday at his home in New York. He was sixty-eight years old. He was a member of the New York, New York Yacht, and Union League Clubs, and also a member of the New England Society, New York Zoological Society, and Brown University Alumni Association.

Dr. FRANK H. RICE, one of the oldest and best-known physicians in Passaic County, N. J., died at his home in Passaic, March 27. He went to the General Hospital to perform an operation, and while doing his work he fell in a faint on the floor. He was picked up by the physicians in the room and removed in a carriage to his home. He continued to grow weaker and expired that night. Dr. Rice was seventy-five years of age. He was born in Massachusetts, was graduated from Woodstock College, Vermont, in 1854, and came to this city thirty-five years ago.

Dr. AMOS HARRISON BRUNDAGE, who died a week ago Sunday at his home in Brooklyn, in his seventy-seventh year, was one of the founders of the New York State Medical Society. He was born at Benton, Pa., and after being graduated from the Central College at McGrawville, N. Y., he taught school for several years in Pennsylvania, at the same time being postmaster at Fleetville and conducting a drug store. He studied medicine, and in 1855 was graduated from the medical college of the New York University. When the Civil War broke out he joined the 179th Regiment, New York Volunteers, and later was acting surgeon of the Sixth New York Regiment of cavalry under Gen. Sheridan, and was present at the surrender of Gen. Lee at Appomattox. At the close of the war he removed to Cohoes, N. Y., and in 1881 he settled in Brooklyn. He was a member of the Brooklyn Medical Society.

CORRESPONDENCE.

A CORRECTION.

To the Editor of the MEDICAL NEWS:

DEAR SIR: In your issue of March 11, in your abstract of the proceedings of the Johns Hopkins Medical Society for December 19, 1904, you report a paper of mine on Ovariectomy at Extremes of Life. In your report you say that I found only three cases of carcinoma in children, besides my own case, in the literature. As the statement is incorrect and was not made in my paper, I should like to give the proper version, which is that only three other cases of carcinoma in children under ten years of age were found in the literature as operated upon. There are many cases, relatively speaking, recorded as having occurred, found mostly at autopsy.

Yours truly,

HARRY T. WIEL.

Baltimore, March 27, 1905.

THE LYING-IN HOSPITAL.

To the Editor of the MEDICAL NEWS:

DEAR SIR: Noting your comment on the Lying-in Hospital I am tempted to give you a sample of the style of treatment I once received there:

Some time ago I went to this hospital to see Dr. X., my cousin, a member of the resident staff. I presented my card to the clerk at the door.

He asked, "Have you an appointment with Dr. X.?"

"No," I said, "but I think he will see me."

"Then I won't send your card to him," said the clerk.

"Why?"

"Because I don't want to, and the doctors don't want to be bothered."

"But this doctor is my cousin, and I know he will be glad to see me," I answered.

"I can't help that," said the clerk; "I am not going to send your card up, and you might as well go away."

Then I asked, "Can I see the house physician?"

(This official happened to be passing through the office at the moment), and the clerk snapped out, "Yes, there he goes."

I have been in a good many public institutions in the United States and in Europe, but I never remember being in one anywhere in which a physician was met with as little civility as I happened to meet with in the New York Lying-in Hospital. I suppose I should have reported the matter to the proper authorities at the time, but I hardly liked to do it because I felt sure it would make trouble for the clerk.

I might add more but refrain.

Very cordially,

X. Y. Z.

SOCIETY PROCEEDINGS.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, held January 11, 1905.

First Vice-President, Franklin B. Stahl, M.D., in the Chair.

The Practice of Medicine in India.—Dr. Anna M. Fullerton (by invitation) read this paper. She said that the practice of medicine in India is attended with great difficulties in consequence of social and religious customs. These, with the dense ignorance and grinding poverty of the mass of the people, are responsible for the widespread epidemics which prevail and which have baffled all the efforts of the English Government for their suppression. There is no scientific system of native medicine. Herb doctors, known as "hakims," combine with their medical practice the use of charms and incantations, with offerings to the gods. Omens and astrology are believed in and much practised. Surgery is consigned to the barber. The condition of women is especially deplorable. High caste women can never see a male physician, but must be treated through the medium of ignorant midwives. Child marriage is an unfailing source of evil. Multitudes of girls of ten to twelve or even less, are thus given over to outrage. Girls of even twelve years are known to become mothers in that land, few attain the age of eighteen without bearing children. An increasing population under these physical conditions cannot be a healthy or a vigorous one. On the part of the mother shocking mutilations are often met with, for which repair of any kind is impossible. The hospitals established by the English Government, and especially mission hospitals and dispensaries are creating a sentiment in favor of Western medicine.

The Antitoxin Treatment of Diphtheria with a Plea for Rational Dosage in Treatment and in Immunizing.—Dr. B. Franklin Royer, of the Municipal Hospital, in this paper, by a series of tables from the statistics of the Board of Health in Chicago, New York

City, Brooklyn and Philadelphia, proved an actual decrease in the loss of life in each city respectively as 5,400, 8,204, 951, and 1,853, a total for these four cities, without allowing for increased population, of 16,408 lives. By means of a preliminary table from the 12 census a reduction of varying numbers per 100,000 population was shown in 30 large American cities.

By a table including 67,748 patients treated in the Metropolitan Asylums Board Hospital a decrease in death rate of 15.24 per cent. was shown. By a table from the South Department in Boston, reporting 16,544 cases, a decrease of 29.26 per cent. was shown. In the Municipal Hospital, reporting 10,219 cases, a decrease of 10 per cent. was proven. Dr. Royer ended his paper with a plea for a dose of antitoxin in proportion to the amount of exudate and location of exudate. Large doses were recommended in nasal, nasopharyngeal and laryngeal diphtheria. A plea was made for a more general use of antitoxin as an immunizing agent, and its use earlier in the disease without waiting for culture returns. The dose in use at the Municipal Hospital is, for tonsillar exudate (single) 2,500 units; purely tonsillar (double) 5,000 units; tonsillar exudate with pillars and uvula or pharynx involved, 7,500 to 10,000 units; nasal and any other part involved or for laryngeal diphtheria, 7,500 to 10,000 units. Repeat the dose in each type of disease in from twelve to twenty-four hours, depending upon the sign of improvement, and every twenty-four hours thereafter; when a large amount of exudate persists, a dose of 5,000 to 7,500 units is given until a good part of the exudate has disappeared.

Dr. H. M. Fussell said he had always felt, as expressed by Dr. Royer, that the cause of the high mortality of diphtheria in the Municipal Hospital was their receiving very bad cases. He also agreed with the writer that the conservatism of the practising physician was responsible in part. A comparison of the treatment of diphtheria twenty years ago and now showed the value of antitoxin, for it is now possible to cure every case of diphtheria in which antitoxin is given in sufficient doses in the early part of the disease.

Dr. A. A. Eshner referred to the intravenous employment of antitoxin in malignant cases of diphtheria, and to its employment by the mouth.

Dr. Royer, in closing, said that they had used the intravenous administration of antitoxin at the Municipal Hospital for about sixteen months in cases that seemed hopeless and had been gratified to see a few get well. He thought the method was well worth trying in malignant cases seen late. He had not mentioned the method, because he thought the practising physician would see the cases early and give antitoxin.

An Unusually Severe Case of Acute Chorea Treated Successfully with Apomorphine.—Dr. Montrose Graham Tull reported a case of acute chorea coming on gradually in a girl, fifteen years of age, with menstruation not fully established, presenting symptoms of acute mania, thickened tongue, guttural and unintelligible articulations, covered with a confluent, morbilliform, rash, and with incessant choreic movements. After all the accepted forms of treatment had been tried for two weeks, with absolutely no effect, the services of Dr. Charles S. Potts were obtained. He endorsed the diagnosis and treatment pronouncing it the severest case that he had ever seen. Everything else having failed, Dr. Tull concluded to try apomorphine in tentative doses. One-fortieth grain was consequently administered hypodermically with remarkable result. The choreic movements ceased in about three minutes and the child slept peacefully and quietly.

One-twentieth grain of apomorphine every three hours by the mouth was continued for three or four days in addition to the arsenic which she had taken from the beginning, with a perfectly uninterrupted recovery. Within two weeks the patient went to the seashore for the summer and soon became perfectly well. The case seemed of value as the diagnosis and earlier treatment were both reviewed and endorsed by a specialist of standing and from the fact that practically all known means had been exhausted before apomorphine was used. The good results following so promptly the administration of apomorphine renders it of especial importance.

Stated Meeting, held January 25, 1905.

The President, James M. Anders, M.D., in the Chair.

Specimens Illustrating the Need of Early Operation in Surgical Diseases of the Abdomen.—Dr. John B. Roberts exhibited these specimens, the first of which was stricture of the sigmoid flexure due to ulceration of the mucous membrane. A diagnosis of obstruction of the gastro-intestinal canal in the neighborhood of the pylorus and duodenum was made. The condition of the patient was so bad that a jejunostomy alone seemed possible. This was done for the purpose of feeding the patient prior to a more extensive examination of the abdomen and operative relief of the condition found. Death occurred after a few days from exhaustion. It was then found that the obstruction was in the sigmoid flexure. Early operative relief would almost certainly have been accomplished by excision of gut or intestinal anastomosis. The second specimen showed a perforated duodenal ulcer close to the pylorus. A time for operation was appointed, but before operation was done perforation occurred. Immediate operation was then advised as a last resort, but the patient and his friends would not consent. Dr. Roberts believed there was little doubt that a gastrojejunostomy done a day or two prior to the time of perforation would have saved this patient's life. The third specimen was a perforated appendix removed from a case which had come under Dr. Roberts' care about forty hours after an attack of abdominal pain. When he saw the man his pulse was 160 and very feeble. His hands were cold, his face was covered with a clammy sweat and the abdomen distended and painful. Believing that operation would almost certainly result in death Dr. Roberts abstained from even opening the abdomen. Autopsy showed the lower abdomen full of pus with a gangrenous opening in the appendix big enough to admit a lead pencil. The fourth specimen was a large gall-stone measuring an inch and a half by three-quarters of an inch from the gall-bladder of a woman who had suffered for a number of years repeated attacks of pain in the region of the gall-bladder. Operation showed the stomach, gall-bladder, liver and omentum to be bound together by old and firm adhesions. The gall-bladder was dragged backward until its fundus pointed toward the spinal column. It was entirely filled by this large stone. The patient had in addition a bent and adherent appendix from former attacks of appendicitis. The gall-bladder was opened, the calculus removed only with great difficulty; and the appendix excised. Drainage through the lumbar region was employed and a large drainage tube introduced through the abdominal incision. The patient did moderately well for about two days and then died from asthenia. The case illustrated the importance of cholecystotomy in the early stage of all cases of gall-stone disease. The fifth specimen was a globular gall-stone about

three-quarters of an inch in diameter removed from the junction of the hepatic, cystic and common gall-duets. The patient had great pain, persistent jaundice, which at the time of operation gave her a dark bronze color. Cholecystotomy was required for extraction of the stone and was followed by hepatic and abdominal drainage.

The specimens were shown to call attention to the importance of operating upon gall-bladder disease, inflammations of the appendix, and obscure lesions of the stomach and intestines early. Dr. Roberts believes that the best results will undoubtedly be obtained in such cases by early exploratory incision, followed by operations for relief, even if such surgical methods are employed before definite diagnosis can be made. He stated that the profession and the public should realize that this is the teaching of modern surgery.

Dr. L. J. Hammond attributes the delay in operation not always to the surgeon or physician, but very frequently to the patient who goes from surgeon to surgeon and from hospital to hospital with fatal results.

A New Saw Especially Adapted for Cranial Surgery.—Dr. H. C. Masland exhibited a saw which seems to solve the problem of being able to enter the skull with safety, celerity and the most promising likelihood of prompt recovery with replacement of the bone flap in a vital condition. The instrument consists in a heavy handle to overcome vibration, a circular saw attached to a short shaft connecting with the flexible shaft of an electric motor or dental engine and a guard accurately regulating the depth of cut. Using either a detachable inner guard or a separate curved guard held by the left hand all irregularities in the thickness of the bone are divided with impunity. The saw makes a cut but one millimeter wide, guaranteeing a minimum waste of bone and replacement without sinking. The original opening can be enlarged by making additional bone flaps.

Dr. John B. Roberts said the saw seemed to him to be a very efficient instrument. He agreed with Dr. Masland that it did not need the guard, since in cutting through bone it is easy to tell by the feel when you get through. The rapidity with which the skull had been cut through showed, he thought, how much the instrument would lessen the time of operation and reduce the time the patient would be under ether.

Dr. T. H. Weisenburg did not agree with Dr. Masland that it was not necessary to have the saw set to cut thicker than a quarter of an inch, since he had seen some skulls in which a deeper cut was required. Neither did he agree that it was not necessary to have a circular incision. The circular flap in his opinion is more easily replaced and is better for cosmetic reasons. He further disagreed with Dr. Masland in regard to the question of time and referred to Dr. Frazier's operations in the University Hospital in which he opened the skull in two minutes and seldom exceeded three or four minutes, which he scarcely thought could be improved upon.

Dr. Masland, in closing, referred to the instrument used by Dr. Frazier at the University of Pennsylvania. The width of incision made by that instrument he understood to be an eighth of an inch at least, which he did not think offered as great probability of union through the line of incision as a cut one millimeter in width made by the saw which he exhibited. This guaranteed a minimum waste of bone, and replacement without sinking.

The Limitations and Possibilities of Electricity in the Treatment of Diseases of Women.—Dr. Barton Cooke Hirst presented this paper. He has found

of late years an advantage in the use of galvanism and faradism in a limited number of conditions among the diseases of women. As a hemostatic agent in uncomplicated small fibroid tumors with no other symptoms than metrorrhagia, he regards it as one of the most efficient possessed by the medical profession. He finds it peculiarly useful in the treatment of amenorrhea and sterility the result of imperfect development, or atrophy of the uterus. Two illustrative cases were reported in which normal menstruation was restored and conception occurred by means of this treatment. In one woman there had been amenorrhea for a year. In the other the menstruation had been reduced to a scanty discharge lasting less than a day as a result of lactation atrophy. The third indication was to restore tone to a paretic sphincter ani muscle after its restoration by surgical means, in cases in which repeated attempts had been made to restore the muscle, with failure, and in which there had been no contractile power exercised for a number of years. A fourth indication for the use of electric currents was found in certain types of dysmenorrhea associated with ill-developed uterus. Local treatment, however, he believes is very rarely practicable in such cases. This limited number of conditions Dr. Hirst said comprise all in which it can be hoped to accomplish much by electricity. At the outset of the paper he disclaimed any intention to discuss the newer developments of electric treatment, such as the use of the X-rays, the ultraviolet rays and high frequency currents.

The Toxic Changes in Brain and Spinal Cord due to Carcinoma.—Dr. T. H. Weisenburg said that the influence of carcinoma of parts other than the brain and spinal cord upon the nervous system is becoming better recognized. Metastasis may occur in the brain, where it may be either in the form of a tumor or an infiltration of cancer cells with the pia of the cortex or of the base of the brain. A case is recorded where basal syphilis was diagnosed, but at the autopsy a metastatic cancer was found. This teaches that whenever cerebral symptoms occur in the course of carcinoma, no matter in what form they appear, metastasis should be thought of in the diagnosis. In the spinal cord, metastasis generally involves the spinal vertebrae, causing a pressure myelitis. Cases are recorded where during the course of the disease such symptoms as mental apathy, dementia, hemiplegia and aphasia occur. These are undoubtedly of toxic origin. Instances have been recorded by the writer of bulbar symptoms and dementia. In these cases a careful microscopical examination of the brain and spinal cord demonstrated alterations in the nerve cells of the medulla oblongata and pons. In another case where there were no cerebral symptoms, changes were also found in the nerve cells of the cortex. Such findings have not been previously recorded.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, held January 12, 1905.

The President, Charles L. Dana, M.D., in the Chair.

Portrait of Dr. Detweiler.—The first business of the evening was the presentation by Dr. S. A. Knopf of a portrait of Dr. Detweiler, the distinguished German tuberculosis expert, who died just a year ago. Detweiler had been an army surgeon in his younger days and contracted tuberculosis in the discharge of his duty, for which he was treated successfully by Brehmer at Gerbersdorf. Here he stayed for six years, eventually becoming Brehmer's assistant. Then he

founded a sanatorium of his own at Falkenstein. This situation was only 1,200 feet in altitude, and Detweiler successfully impugned the teaching that altitude was necessary in the successful treatment of tuberculosis. His experience at Falkenstein showed that climate is entirely of secondary importance in the treatment of tuberculosis. He was the first who insisted that outdoor air, even in cold weather, the patients resting quietly in chairs, is the most important element in the therapeutics of tuberculosis. This principle has now come to be adopted by all sanatoria. Detweiler was the first to establish sanatoria for poor patients suffering from tuberculosis. His most wonderful quality was his influence over his patients. As he frequently said, the physician of the tuberculosis patient must be more than a friend, he must be a father confessor. Dr. Detweiler came to occupy a very special place in the affections of his patients. His birthdays were celebrated as special feast days, and cured patients, remembering his goodness, helped him to accomplish many things for the tuberculous poor. He was a man who had saved more lives than many distinguished generals have destroyed. He was a greater hero than a talker, and it is but fitting that his good deeds should be remembered at least by his brother practitioners.

Methyl Alcohol and Neuritis.—Dr. Smith Ely Jelliffe said that the recent sensational reports, so many of which were unfortunately true, with regard to blindness and death from the use of methyl alcohol, had called special attention to this substance. There is no doubt that it causes severe optic neuritis even to complete destruction of the physiological function of the nerve in many cases. It seems to have a selective action for the optic nerve, however, since other forms of neuritis are not reported as the consequences of its use. In this it differs very decidedly from ethyl alcohol, which has a tendency to produce multiple neuritis as first pointed out by the American observer, Dr. Jackson, of Boston, in 1822. The question of multiple or peripheral neuritis consequent upon the use of methyl alcohol is of special interest at the present moment, hence the advisability of reporting all personal observations that may round out our knowledge of the effects.

Illustrative Cases.—Altogether three cases have been under observation in which peripheral neuritis seemed to be due to the consumption of methyl alcohol. The first case was that of a man thirty-four years of age, who came under the heading of a constant drinker. He did not go on "sprees," but every night he took a considerable quantity of whisky between dinner and bedtime. He took what he considered a very special brand, for which he used to pay a neighboring druggist twenty-five cents a quart. The druggist assured him that the reason why it could be sold so cheaply was that it was tax free. His customer thought it was moonshine whisky and was very proud of his opportunity to get it. It proved, however, to be nothing more than Columbian Spirits, the well-known form of deodorized methyl alcohol combined with flavoring extracts and ethers so as to give it a pleasant taste. The symptoms complained of in this case were those of ordinary typical alcoholic neuritis. There was the characteristic drop-wrist with partial ptosis in the upper lids and a loss in vision which, after careful investigation, proved to be due to optic neuritis.

Etiology of the Condition.—There seems to be no doubt of the etiology of the symptoms that developed in this case. The man was not a beer drinker, so that arsenic would practically be excluded. He had nothing at all to do with lead or with any form of metallic poisoning. He had not recently had any of the in-

fectious diseases, nor was he a sufferer from any of the toxic dyscrasias that sometimes cause such neuritic symptoms. The history seemed very clear. He very seldom drank outside the house, and whenever he drank at home, it was always of this mixture of Columbian Spirits, and though never to excess, he took it regularly every day. The most interesting feature of the case is the fact that the neuritis which developed did not differ from that due to the taking of ordinary whisky, and this may serve to throw some light on other obscure cases.

Painters and Shellac.—The two other cases occurred in painters who were working in an atmosphere of methyl alcohol, but with regard to one of whom at least there was a suspicion of the consumption of methyl alcohol by the mouth also. These men were varnishers who were employed in finishing desks. They worked in close rooms and were exposed constantly to the fumes of the methyl alcohol for many hours each day. Neither of them suffered from very severe symptoms, and probably their symptoms would have been neglected for some time only for the fact that they developed simultaneously, and this led them to suspect their origin sooner than would otherwise have been the case, and brought them to a physician. Both of them suffered from hyperesthesia of the hands, though there was some numbing also and a parathesia, prickling sensations. Pain was caused by pressure over the nerve trunks, though there was no pain in the joints. They did not mind their sensations until they began to lose power in their hands, when the motor weakness scared them into consultation with a physician. It seems that peripheral neuritis from methyl alcohol is caused by the breathing in of the fumes. De Schweinitz has reported some cases of optic neuritis due to this cause.

Comparative Toxicity of Alcohols.—All the alcohols of this series are toxic, but in an ascending scale from methyl alcohol to amyl. Methyl alcohol, or wood alcohol, as it is called, is cumulative in its effect and the others are not. This seems to be due to the fact that one of the most important effects of methyl alcohol is a great retardation of oxidation. Methyl alcohol remains more or less unchanged when in contact with the tissues, and as a consequence continues to exert its influence. There is usually associated with it some formaldehyde and formic acid which adds to its toxicity. In recent years, owing to the making of odorless wood alcohol, so-called Columbian Spirits, there has been much more abuse of it than has come to light. The Board of Pharmacy in New York City have reported its use in tinctures. It is surprising that more peripheral neuritis has not been reported from its use. It seems probable, however, that deaths from its use come so soon that peripheral neuritis has no time to develop. It acts upon the ganglion cells of the retina particularly, but also on the other important cells of the central nervous system.

Experience at Bellevue.—Dr. Alexander Lambert said that in spite of the rumors of the use of methyl alcohol for the adulteration of cheap whisky, the experience of methylic poisoning at Bellevue is not large. In the last ten years some 50,000 to 60,000 alcoholics have been treated in the wards at Bellevue. Of these nearly 15,000 have been in Dr. Lambert's service. Personally he has not seen any one suffering from what he considered wood-alcohol poisoning, and he has seen no blindness. Bellevue is the place to study the effect of bad whisky. Avenue A whisky frequently produces symptoms of acute poisoning with symptoms of rapidly increasing collapse. This often proves fatal. At times a variation of the symptoms consists of furious delirium.

Some of these patients when asked how much liquor they had taken, say "a drink or two." They will confess to taking this much before breakfast. Further investigation, however, shows that by a drink over on Avenue A is meant ten cents worth, and ten cents worth is, as a rule, a pint of whisky. A quart of whisky before breakfast will knock out most men. As a consequence of this excess in drinking, the pathological symptoms found post mortem are very intense, affecting particularly the stomach and duodenum.

Seaside Sanatoria for Surgical Tuberculosis.—Dr. Linsly R. Williams read this interesting paper. There are now many sanatoria for children along the seashore in various countries for the treatment of tuberculosis. Contrary to the experience with adults, salt air and sea-bathing seem to be the best possible treatment for scrofulous conditions in children. The application of this principle to surgical tuberculosis, however, is as yet very incomplete. An English surgeon said not long since that 'the surgical treatment of tuberculosis is scarcely justified in large city hospitals. In orthopedic hospitals, the necessity for fresh air and sunshine is well understood, and children are sent to country homes during the summer and come back wonderfully improved. The French have demonstrated that surgical tuberculosis patients do extremely well in seaside sanatoria.

Experiment in this Country.—Accordingly it was resolved to try the affect of life near the sea on patients suffering from surgical tuberculosis here in New York. In June, 1904, tents were erected on Coney Island and the patients were instructed to live as patients suffering from pulmonary tuberculosis. The cribs were put outside in the summer on a piazza and the fullest admission allowed to the wards. As the fall came on and the days grew quite cool, the children were kept warm by means of hoods and gloves, though there was practically no complaint of the cold. The effect upon the children has been most marked. All of them are in much better condition, and the average gain is nearly ten pounds in weight. The children were instructed, as were also the nurses, with regard to the care of the mouth and the teeth of the patients. In children suffering from tuberculosis in tissues outside the lungs, this seems an especially important matter, since the avenue of entrance for the tubercle bacilli may sometimes be carious teeth, and then poor teeth always disturb the eating and thus hinder the improvement of the children's health. No special medication was given, though in some cases arsenic and iron were considered to be indicated and were used. When this group of children who had been all summer in tents, and during the colder weather in a frame building on Coney Island, is compared with a corresponding group of hospital children, the contrast is very striking. Any one who sees them will not want to take the responsibility for treating surgical cases in the city.

The Fresh-Air Element.—Dr. J. W. Brannan, in discussing Dr. Williams' paper, said that the results have been excellent almost beyond expectation. Evidently the most important factor has been the air. While the French were the first to introduce this method of treatment, they seem to fear the night air. The fact that many of Dr. Trudeau's patients live outside all the time contradicts any idea of special harm in the night air. The most interesting thing at the present time among these children is to find that though playing outside nearly all the day, their hands are as warm as toast. Of course the children must be kept for a considerable period in such favorable condition. In France they do not expect a cure of joint tuberculosis under two years.

The French think the sea air is better than mountain air, and one thing is certain, that the amusements supplied for children on the seashore constitute a running series of temptations for them to be outside most of the time, and this is the important element in their treatment.

Children Comfortable.—Dr. Virgil P. Gibney said that in his visit to the wards, while he himself found it at times so cold as to be almost uncomfortable, the children not only did not complain of it, but they had become used to it and did not mind it. He considers that the sea air is an important consideration in the matter and feels that it would be a mistake not to give children such opportunities as are afforded by this seaside work. The cases sent were not selected and the results are enough to convince any one who might be dubious of the benefits that accrue from this outdoor air treatment, of cases of surgical tuberculosis.

Absence of Symptoms.—Dr. Charlton Lewis said that one of the most striking features of the sanatorium was the absence of all the usual symptoms of discomfort in the children. In order to convince himself, he spent one night down there and found there were no night cries and no startings in the sleep, though such symptoms are not unusual in children suffering from tuberculous joints, even after considerable improvement has come. The temperature at night in the room was 32° to 44° F., but the children did not complain, and their heads and ears were kept warm by means of hoods. The experience undoubtedly shows the value of fresh air for these patients.

Drugs for Tuberculosis.—Dr. Abraham Jacobi said that while he appreciates thoroughly the helpfulness of fresh-air treatment for tuberculosis, he does not consider, in children particularly, that the affection could ever be left entirely untreated. There are certain drugs that always do good, and to neglect their use at the time when patients are especially susceptible to their good influence is a sad mistake. Wagner pointed out years ago that when phosphorus is fed to dogs suffering from fractures of bones, the good effect of it could plainly be perceived. Dr. Jacobi has found phosphorus of excellent service in subacute or chronic osteitis and in other forms of bone tuberculosis. The phosphates should not be employed for this purpose, because they are inert. Dr. Jacobi has also found that guaiacol, the active principle of creosote is a much better drug to use where there are pulmonary symptoms than creosote itself, and it saves considerable disturbance of the stomach, besides being more directly therapeutic. Phosphorus of course is also of service in rachitis, and especially in bone lesions.

Injections for Syphilis.—Dr. H. G. Klotz read a paper on Intramuscular Injection of Insoluble Preparations of Mercury in Syphilis. He said that this method of treatment is undoubtedly the best, though unfortunately it is somewhat suspected by ordinary medical practitioners. Personally he has given some 2,500 injections and has had no bad results of any kind. He has given in various cases from one to forty-two injections, usually suspended in oil or liquid vaseline, and his custom is to give four to six series of six or eight injections at a week's interval and then consider that his patient has all that is necessary. The most interesting and important feature of this method of treatment is the small amount of mercury needed for a cure. In some cases not more than 10 grains have been employed in all. In most cases, the limit has been about 40 grains. Of late years he has discarded the use of iodide and has treated tertiary manifestations by mercury alone. He has often seen relapses that took place under

mixed treatment become better under the injection treatment almost at once and then remain thoroughly under control. His favorite drug has been calomel. This is so prompt in its manifestation that he inclines to agree with the specialist in syphilis, who said that one injection of calomel is sufficient to differentiate malignant disease from syphilis. The promptness of relief is one of the most prominent traits, and even the severest manifestations come under its influence at once.

Some Contraindications.—His custom has been to give the calomel injections deep into the muscles of the buttocks, and he has not often seen nodules as the result of it. Altogether there has been four abscesses in 2,500 cases. Where the occupation of the patient requires the going up and down stairs much, the injection treatment is not suitable, and it will be a matter of regret if employed. In syphilitic patients who are suffering from tuberculosis and who are weakened in constitution the result will not be favorable. Dr. Klotz has never seen albuminuria except in one case where some albumin had been seen previously in the urine. Cases of diabetes were not unfavorably affected by the injection treatment, but, on the contrary, seemed to do better than those treated by mercury by the mouth. Where albuminuria was present, this was not increased by the use of injection, and it is evident that they have no spiritant effect upon the kidney.

Fashions in Treatment.—Dr. Edward L. Keyes said that there are fashions in the treatment of syphilis and that at different times the disease has been treated in different manners. Personally he has found the use of intermuscular injections of the salicylate of mercury of great service. This acts as promptly as fumigation and is much less bothersome of administration. Dr. Keyes has not seen salivation produced by this means. He considers it rather important, however, not to make syphilis too light a thing for the patient, as otherwise there is a tendency to neglect the general health, which may encourage the development of the quaternary symptoms of the disease. As is generally recognized now, these are the most important features of the disease, and must always be considered in every case. If light doses of mercury are continued for at least two years after syphilitic infection, patients are prone to take better care of their general health, and it is a matter of common conviction that it is in patients who neglect this feature of the care of their disease that the organic nervous diseases develop. Symptoms must be treated as they occur, and in case of fulminant symptoms, mercurial injections are important.

Certain Advantages.—Dr. Prince A. Morrow said that it is now more than twenty years since he read a paper before the Academy on the "Treatment of Syphilis by Injection," and the method has come out of the tentative stage. It seems better, however, to draw out the treatment of syphilis than by intensive mercurialization to prevent symptoms and so lead the patient perhaps to neglect the serious condition that still remains. On the other hand, it must be remembered that while in some cases 10 or 12 injections may be sufficient for the treatment of the disease, many more may be required. Dr. Morrow himself has used more than 100 in a single case. In certain obstinate symptoms of syphilis, the injection treatment is more efficacious than any other. Dr. Morrow has seen throat symptoms that would yield to no other form of treatment get better under injections of mercury and stay better.

Reserve Treatment.—Dr. Morrow considers however, that the injection treatment should be a reserve method and not the routine treatment for syphilis. He has seen no abscesses or other disagreeable results from

its use, but considers that the patients will take better care of themselves if treatment is more prolonged. In certain late cases of syphilis there is an idiosyncrasy against potassium iodide, which may be best replaced then by injections of mercurials. On the other hand, when early cases of syphilis have run a very mild course, but the symptoms have recurred severely, perhaps because of lack of care on the part of the patient, then hypodermics are very useful. Syphilitic neuralgias and neuritis get better more rapidly under this treatment than any other. Dr. Morrow considers the salicylates the best form in which to give these injections, though in some cases of late lesions of the nose and throat, calomel has seemed to be more effective.

Dr. Fuller said that the salicylates may be irritant, but they are efficacious. He uses the injection method more and more, and for quick results considers it indispensable. On the other hand, some patients seem to absorb so little mercury from the intestinal tract that this method is necessary.

Rhinoscleroma.—Dr. Toeplitz presented a patient suffering from this rare affection. Altogether some six hundred cases have been reported. The disease is epidemic in Central Europe, but some cases of it are seen here in New York in emigrants. There is a specific bacteria that causes the disease, but it is a very low-grade virulence, and seems only to be able to produce its effect in persons who have been long associated with those suffering from the disease. The disease is of long duration but incurable and the slower the course of the symptoms the more favorable is the prognosis. It has been known to disappear spontaneously after long continued severe fevers.

NEW YORK PATHOLOGICAL SOCIETY.

Stated Meeting, held December 14, 1904.

The President, Otto H. Schultze, M.D., in the Chair.

Sarcoma of the Small Intestine with Extensive Metastases in the Heart Muscle.—Dr. E. Libman presented this case. The patient was a male, thirty-five years of age, who entered Mt. Sinai Hospital under the care of Dr. Gerster. Four years before admission the patient had an attack of pain in the hypogastrium. Six months later he had a second similar attack, and eighteen months later a third attack lasting five weeks. Since that time he had been well until four months ago, when the hypogastric pains returned and he developed pains in the left loin. These pains did not radiate downward, though the patient had pain at the end of the penis during urination. The stream was never interrupted. He had to get up once every night to urinate for the past three weeks. Three weeks before admission he vomited all food. He had not been jaundiced. The patient thought he had lost fifteen pounds. When examined on admission the heart dulness was found to extend from the right border of the sternum to the nipple line. The apex beat could not be felt. The sounds were weak and the first sound of the apex was short with very little muscular quality. The liver was enlarged and could be felt 2 cm. below the border of the ribs. The spleen was not palpable. The abdomen wall was rigid. The abdomen was generally tympanitic, and there was marked tenderness just above Poupart's ligament on the left side. Rectal examination showed that about 4 cm. above the prostate there was a large mass, the size of an orange, which extended up beyond the reach of the examining finger. This tumor extended some-

what more to the left than to the right, was movable and nodular, the mass bulging into the anterior wall of the rectum. The patient was operated upon by Dr. Gerster. The appendix was found to be adherent to a large mass filling the pelvis. The mass was found to be a tumor involving the intestines so that it could not be removed. The further course of the patient was uneventful. The temperature was slightly raised. A fecal fistula developed through the operation scar.

At autopsy the thymus was not evident. There was left hydrothorax with hemorrhagic infarcts in both lungs and areas of new growth. The bronchial nodes were enlarged, pigmented, and infiltrated. The posterior mediastinal nodes were also infiltrated. The heart weighed 510 grams. On the surface of the right ventricle there were several rounded hemispherical prominences, white in color and 2 cm. to 3 cm. in diameter. All the chambers were dilated. The foramen ovale was slightly open. The wall of the right ventricle was thickened. The color was grayish red, particularly near the center. The left ventricle was dilated and the wall was gray in color. The muscle was rather friable. Evidently it was diffusely infiltrated by the new growth. The spleen contained a few anemic infarcts. The gall-bladder was diffusely infiltrated by the new growth. The kidneys contained several anemic infarcts, and areas of new growths which shaded gradually into the kidney tissue proper. The posterior wall of the bladder was infiltrated with the new growth throughout all coats except the mucosa. There were several blackish areas on the posterior walls and the vessels of the trigone were injected. The duodenum was infiltrated over a length of 10 cm., at which point the intestine was dilated. Below this infiltration there were several places at which the intestine was infiltrated for short distances and dilated. At a distance of 120 cm. from the beginning of the jejunum there was a very large dilatation of the intestine, due to infiltration of its wall by the new growth. The tumor was whitish in color and soft; the greatest thickness of the wall of the gut was 1½ cm. The inner surface of the gut was necrotic and ulcerated. This portion of the jejunum was adherent to the bladder, which was infiltrated by contiguity and was also adherent to the sigmoid flexure. The mesenteric nodes were greatly enlarged and infiltrated. There was a partial thrombosis of the superior mesenteric artery.

Microscopical examination showed that the primary tumor of the intestines was lymphosarcoma. The heart, lungs, kidneys, spleen, mesenteric nodes, liver, gall-bladder, and urinary bladder showed metastases. The pancreas and the adrenals showed no metastases. In the wall of the left ventricle and in the septum there was found to be a very extensive infiltration by the new growth, the individual muscle fibers being crowded apart by the cells of the tumor. The fibers were markedly degenerated. The growth was found to begin in the intestinal submucosa and to infiltrate between the muscle bundles. Special points of interest about the case were the dilatation of the intestine, which often occurs in lymphosarcoma of that viscus. There was, also, no ascites and no enlargement of the external lymph nodes. The growth of the tumor in the pelvis and the invasion of the bladder is a characteristic of some of these tumors which deserves more attention from a clinical standpoint than has heretofore been given. The duration of the disease was longer than that of any other case seen by the speaker. This would lead

one to suspect a non-malignant tumor or a tuberculosis of the intestine. Most cases died within nine months, though Rutherford had described one case with a duration of two and one-half years. The involvement of the heart was the most striking feature of this case. Although a note was made on admission to the hospital that the first sound had very little muscular quality, there was no suspicion that the heart itself was involved by the new growth.

Dr. Harlow Brooks said that he had studied six cases of lymphosarcoma involving the stomach and small intestine. Three of these presented metastases in the heart. Some years ago he had looked up the literature and had found that by far the larger percentage of cases where cardiac metastases occurred were of this kind. There was evidently a tendency on the part of the heart to accept these metastases of lymphosarcoma.

A Case of "Splenomegalie Primitif" with Involvement of the Hemopoietic Organs.—Dr. N. E. Brill spoke on this subject, reviewing the literature and giving the clinical history of his case. Under the caption of primitive or primary splenomegaly, he said, there had been heaped together a large variety of non-malignant enlargements of the spleen. Osler, in an attempt to establish order out of chaos, had suggested that those cases of splenic hypertrophy with or without anemia and associated with hemorrhagic tendencies should be classed under the name of splenic anemia. Osler considered that the enlargement of the liver in the group of cases to which Banti called attention was but a terminal feature of the disease called splenic anemia. Attention was first called to the group to which Dr. Brill's case belonged by Gaucher, Picou and Raymond, and Collier. More recently two cases have been described by Dr. Bovaird. This class of cases, called by Gaucher epithelioma of the spleen, should be taken from among the group of splenic anemia, because its clinical history and pathology were distinct. The clinical history of Gaucher's type is so distinct that Dr. Brill had been able to state that his cases, published about five years ago, did not belong to the category of splenic anemia, but belonged to this type. The subject of the present demonstration was one of these cases. The patient died in March, 1904, after having been under observation since 1885. The heredity of this young man showed nothing of this type of disease. His history had been traced as far as the great-grandfather on the maternal side and to the grandparents on the paternal side. In none of these ancestors was there any suggestion of this disease. The disease has appeared only in the one generation. The parents of the patient had six children. The oldest died at the age of three of marasmus. The second one is now a woman of forty-five years and is in good health. The third child was one of the patients described in 1901. The fourth was the subject of this demonstration. The fifth had shown in the past two years evidences of the disease. The sixth had died at the age of nine, having shown from his third year a splenic enlargement, from exhaustion after tremendous increase in the size of the spleen and liver. Thus four out of six children have had the disease. This patient had the usual infectious diseases of childhood, measles, scarlet fever, etc. He never had malaria nor tuberculosis nor syphilis. From his third to his ninth year he was not very strong, but afterward grew into a strong chap and had no complaints whatever except occasional bronchitis. At the age of fourteen he

began to notice that he perspired rather freely; otherwise he was in perfect health. In 1888, when his sister was married, there having been no occasion for a previous examination, she herself called attention to a mass on the left side of her abdomen. On examination a tremendous enlargement of the spleen was made out. The brother was also examined and there was at that time no enlargement whatever. The next year the spleen could be felt in the patient who was under consideration, the upper portion extending to the seventh rib. His disease thus manifested itself first in 1889, fifteen years before his death. At this time he began to have attacks of epistaxis. These were the only manifestations of hemorrhage for some years. They would occur four to six times a year, were rather profuse, and lasted for a short time. During this period there were no signs of anemia. About four years afterward, the enlargement of the spleen going on very slowly, a beginning thickening of the conjunctiva on the nasal side appeared. This was yellow white in color, and was much firmer and denser than a pinguicula. This symptom was also noticed in the sister, and has since appeared in the other sister.

During this time the blood showed no changes. There was a normal number of red cells, varying from 4,500,000 to 5,600,000. There was no increase in the white cells, and no disturbance of the normal relations of the leucocytes. The spleen continued to increase in size, and nine years afterward the liver began to show enlargement. In 1900, the patient had an attack of acute colitis, preceded by a chill and followed by a temperature of 106.5° F. This was accompanied by numerous watery movements, and after two days by some blood and mucus. From this time the disease progressed very rapidly. During convalescence from this attack, a number of hemorrhagic furuncles appeared on the body, the largest on the extremities. When these discharged their contents they left a permanent pigmented spot. A change in the appearance of the parts of the body which were exposed to the light and air also manifested itself. The skin of the face and hands became yellowish brown in color. There was no icterus at any time. There was no further pigmentation except that left from the furuncles. In 1902, the first sign of pain manifested itself in the region of the spleen. The spleen extended down to the crest of the ilium by this time. Over the bridge of the nose was a persistent erythema, which had made its appearance when the patient was fourteen years old and which lasted until his death. In 1902, for the first time, pain was noticed at the extremities of the tibia and femur. Up to this time there had been no bone pain. In June, 1902, the patient contracted malaria and the plasmodia were found in his blood. After this attack the first tendency to hemorrhage manifested itself. There now appeared permanent petechiae scattered over the hands, legs, and trunk. During 1903, he had a fairly favorable year, notwithstanding the tremendous increase in the size of the spleen and liver. He complained of no discomfort whatever. After 1895 the first sign of anemia appeared. The hemoglobin was about 80. From 1895 it gradually diminished, losing perhaps one or two points a year until 1900, when after the attack of colitis it suddenly fell to 65. From this time on to the end of his life on March 30, 1904, the hemoglobin diminished until it reached 45. In March he complained of dyspnea. On examination the signs of pericarditis were manifest. The area of cardiac

dulness increased rapidly, establishing a diagnosis of pericardial effusion, which Dr. Brill assumed to be hemorrhagic. Death occurred on March 31, 1904. The autopsy was made by Dr. E. Libman at midnight. Dr. Libman was asked to present the results of the autopsy and Dr. F. S. Mandelbaum the pathological histology of the affected organs.

Dr. E. Libman showed the liver and spleen from the case described by Dr. Brill, and also presented those from the second case which Dr. Brill had mentioned. The spleen in the first case weighed 11 pounds, the liver 10 pounds. In the second case, the spleen weighed 14 pounds, the liver over eight pounds. The organs in both cases presented the same findings, except that atheroma of the splenic vein was absent in the first case. The spleen was very firm. It was chocolate in color, with lighter grayish-red areas. The pulp was swollen. There were numerous infarcts present, some recent, some old. Many of these were in the periphery of the organ. There was no evidence of marked fibrosis to be seen, except where the pulp was less swollen. The measurements were 40 x 20 x 14 cm. The liver measured 35 cm. in width, either lobe, 27 cm.; the organ was 13 cm. thick. There was marked old and recent perihepatitis. On section, the organ was chocolate colored, of firm consistency; it appeared rather granular. Throughout the viscous there were irregular white markings varying in diameter from 0.5 to 2 or 3 cm. They did not seem to bear any definite relation to the lobular markings. The pericardium was distended by two liters of very bloody fluid. The lymph-nodes in the thorax and abdomen were enlarged. The largest were about the size of a large bean. They were fairly soft, and were of a peculiar ochre color, some showing hemorrhagic areas. The bone marrow in the first case was quite firm, dark red in color. In the second case it was partly red and partly ochre-colored.

Dr. F. S. Mandelbaum described briefly the histological picture of the case. The characteristic feature of the disease was a very marked endothelial hyperplasia. This was found in the spleen, liver, lymph-nodes, and bone marrow. The picture found in the case followed very closely, with a few exceptions, the case described by the French writers and Dr. Bovaird, as mentioned previously by Dr. Brill. In the spleen the endothelial hyperplasia occurred in round or oval alveolar spaces. These spaces were the pulp spaces or venous sinuses, and were lined with endothelium which was normal in some areas and slightly swollen in others. The endothelial cells as a rule filled these spaces completely, though some of the alveoli contained a few normal pulp cells, while others were more or less filled with red blood cells. The endothelial cells varied in size and shape, depending on the number in an alveolus. For the most part they were round, oval, or polygonal. The boundaries of the cells were fairly well distinguished, as a rule, but in some places the cells were fused together and the cell outlines then were not clearly seen. The cytoplasm of the cells was slightly granular, or streaked with fine wavy lines, arranged in a more or less concentric fashion, giving a wrinkled appearance to the cells. The nuclei were relatively of small size. The cell body measured anywhere from 17 by 21 micra to 34 by 47 micra, while the nuclei varied from 5 to 8 micra in size. In some of the cells several nuclei were found, as many as six or more being present in some cases. These were not arranged in any particular form but

were scattered throughout the cell. No forms presenting the usual appearance of giant cells were found. In other parts of the spleen dense bands of connective tissue were seen, also anemic infarcts containing small areas of necrosis. The Malpighian bodies were for the most part absent, though occasionally one could be seen showing a slight thickening of the walls of the central vessel. A large amount of pigment was scattered throughout the sections. This was seen along the connective tissue bands and sometimes in the alveolar spaces. The sections of the liver presented the ordinary picture of a diffuse cirrhosis. There was a marked increase in the interlobular connective tissue without apparent effect on the liver cells. The bile ducts were not affected. The endothelial cells described in the spleen were also found in the liver. For the most part they were seen in the connective tissue spaces, but were not so clearly defined as in the spleen. They were also found in the lobules proper, either near the periphery or in the capillaries, extending toward the center of the lobule. The cells were somewhat smaller in size than those in the spleen, but otherwise were identical in their general appearance and staining reaction. Pigment was also found distributed throughout the connective tissue of the organ.

The sections from the lymph-nodes were so changed that they appeared simply as one mass of endothelial cells, with a remnant of a follicle remaining here and there. With the low power one could see large masses of pigment in the lymph sinuses and also following the reticulum of the node. The endothelial cells had the same general appearances as in the spleen and liver, but their outlines were more definitely preserved. Some very large forms were seen in these sections. The pigment in the nodes, as well as that found in the spleen and liver, gave the usual reaction for iron.

In the bone marrow these endothelial cells were also found, and Dr. Mandelbaum thought this to be the first case of splenomegaly in which their presence in the marrow had been noted. They were found attached to the walls of the capillaries and to the reticulum of the bone marrow. In several places these cells were seen in the lumen of the capillaries. They had the same features as in the other organs. As far as the deductions to be drawn from these sections were concerned, Dr. Mandelbaum did not feel justified at the present moment in coming to any conclusions as to the consecutive involvement of the various organs, or whether the process occurred simultaneously. A modification of Mallory's connective tissue stain, devised by Dr. Buerger, had been used in staining some of the sections. This brought out the markings in the cytoplasm very distinctly and also differentiated the nuclei better than most of the other stains employed.

Dr. David Bovaird, in the discussion, said that these cases were of very great interest from two standpoints. First, the clinical; he thought they proved that there was a definite group characterized by this primary enlargement of the spleen which should be separated from the other groups of cases. Shortly after the publication of his own paper, Dr. Brill had called his attention to this series of cases in one family. Dr. Brill had said at that time that the cases reproduced the clinical picture of the cases described by Dr. Bovaird. In other words, Dr. Brill had made a clinical diagnosis of a condition exactly that was found in these children, and the autopsy findings proved that this diagnosis was cor-

rect. From the pathological standpoint the condition was of interest in the interpretation put upon the findings. Dr. Bovaird thought that the question really lay between whether this condition should be called a hyperplasia, or whether it should be classed as a tumor and called endothelioma. At a recent meeting of the American Association of Physicians, the opinion had been expressed that these conditions belonged in the class of endothelioma. Whether this condition was a tumor or an hyperplasia was one of those questions which only pathologists could discuss to advantage. It seemed that even among pathologists the conception of what constitutes a tumor was not clear enough to enable one to determine the exact position of changes such as these. The clinical history of these cases seemed to point rather clearly to some influence running in a family rather than to a new growth. It would, of course, take many other observations and much further study to determine this point.

Dr. Libman said that the absence of disease of the splenic vessels in the first case was noteworthy. In the condition described by Banti it was usually present. The microscopic changes in the bone marrow were of great interest. There were present many nucleated erythrocytes, lymphocytes and mononuclear cells, neutrophilic and eosinophilic myelocytes and giant-cells in abundance. The occurrence of such changes in the marrow with the absence of abnormal cells in the blood was a remarkable finding. Dr. Libman thought that the cases showing the same lesions as this one—those of Gaucher, Picou and Raymond, Collier and Bovaird—should be grouped separately from other forms of splenomegaly, and for the time being be called "splenomegaly of the Gaucher type." Dr. Osler had seen the microscopic sections and had noted the resemblance to Gaucher's findings.

Recent Observations on Parasites of the Mosquito.—Dr. W. N. Berkeley reported some recent observations on parasites of the mosquito. The first specimen was a minute nematode worm, called by Mr. Henry L. Viereck, of the Connecticut Agricultural Experiment Station, *Agamomernis*. The speaker was indebted to Mr. Viereck for the beautiful preparations shown, illustrating the egg, larva, pupa, and imago of the mosquito concerned (*Grahamia sollicitans*, formerly *Culex sollicitans*), and the parasites. Mr. Viereck wrote that he had found *Agamomernis* only in the female mosquito, usually one only, but sometimes as many as five, in one body. In parasitized mosquitoes, eggs have been found only in one or two individuals out of hundreds examined. The same, or certainly a very closely allied parasite, had been reported as found in a dish of water in which pupae of *Anopheles* had been reared (H. P. Johnson, *Bulletin of New Jersey Agricultural Experiment Station*, November 29, 1902). A very similar worm was described as having been noticed many years ago by Leuckhart (Howard, quoting from Stiles, *Mosquitoes*, New York, 1901). The worm was easily recognized as a nematode under the lower power of the microscope. The speaker had never had the good luck to find a specimen in his own work. The second specimen was a red mite, smaller than a small pinhead (1.5 mm.), which he had discovered on two occasions, attached once to the thorax, once to the abdomen, of one of the common *Culex* species (not worked out carefully, probably *Culex impiger* or *Culex triseriatus*) in the City of New York. The mite appeared to

do little or no damage to its host. A specimen had been kindly identified for him by Mr. Nathan Banks, of the United States Department of Agriculture—through Dr. Howard's good offices—as the larva of a *Hydrachnid* belonging to the genus *Eylais*. Dr. Howard had written as follows: "The adults of these mites are parasitic upon the water-bugs or 'water-striders,' usually of the family *Nepidae*. Their presence upon the mosquito is probably accidental, they being probably in no sense specific parasites of the *Culicida*." Dr. Berkeley feared that both specimens were mainly of academic interest, but thought that, in view of the vast hygienic and economic importance of mosquitos, their parasitology was worthy of systematic study.

Studies on the Etiology of Measles.—Dr. Cyrus W. Field said that these studies of measles were begun in connection with some observations of Dr. Duval's during the summer. Dr. Duval devised a method of obtaining blister fluid in scarlet fever cases to see if he could obtain the parasites described by Dr. Mallory. He used the Wright stain, and therefore in a great majority of the slides there was absolutely no sign of chromatin stain. These bodies stain a pale blue, with a little darker blue granules throughout. After seeing these specimens Dr. Field had made some blisters on scarlet fever patients and also on measles and diphtheria patients. In scarlet fever, out of eighteen cases these bodies were found in fourteen. Thirteen cases of measles were studied. In the first six days of the rash the bodies were found in eight cases. After the fifth day to the tenth day they were not found. They were not found in three cases of diphtheria antitoxin rash, in erysipelas, in hereditary syphilis, in an urticaria rash, in normal skin, or in irritated normal skin. The bodies found were very definite and characteristic. The ones considered as being of interest were those which stained blue with a chromatin staining substance in them in the form of granules or solid dots. The specimens were all stained with Hastings' or the Giemsa stain, the latter being much stronger. Some hanging drops and spreads had been made which showed some very suspicious occurrences. For instance, there were a number of leucocytes in the different fields which gave off pseudopodia which would work off very rapidly and in a short time assume a definite round appearance, with two, three, or five granules dancing rapidly and giving a much more striking appearance than many malarial parasites. They were very numerous in freshly drawn serum, and when stained showed that these small granules were chromatin-like in their reactions.

SOCIETY OF THE ALUMNI OF CITY HOSPITAL.

118th Stated Meeting, held January 11, 1905.

Joseph F. Terriberry, M.D., in the Chair.

Sporadic Cretinism—Observations Based on Fourteen Personal Cases.—Dr. E. Mather Sill read this paper. The author related the history and treatment of 12 cases of infantile cretinism. This paper will be found in full in a subsequent issue of the *MEDICAL NEWS*.

Dr. William P. Northrup opened the discussion of Dr. Sill's paper. He said that very great credit was due to Horsley for the successful experiments on monkeys which led directly to an understanding of the then obscure etiology of myxedema. It rendered intelligent and successful treatment possible. He then

described at great length the history of an attack of pneumonia which occurred in a cretin under his observation. Except for the temperature, which rose but slightly above the normal, this attack ran the usual course, which is expected of the disease in the healthy individual. He said that the color of cretins was usually characteristic and likened it to that of tallow. He compared cretinism with a case of myxedema in an adult and showed that although apparently different, the symptoms exhibited by the two types were in reality identical.

Dr. Charles G. Kerley briefly reported a case of cretinism occurring in a patient three years old. He showed photographs taken at intervals of three or four days, during which time 34 grains of thyroid extract had been taken. The change in the individual was so marked as to render it impossible to recognize the two photographs as having been made of the same patient. The speaker considered the diagnosis to be as a rule relatively easy. He usually begins treatment by giving one-half grain of thyroid the first day and one grain the second day, the dose being then kept at this point and improvement awaited. The signs of this improvement were in his opinion first that the skin loses its dryness and that occasional perspiration is noticed. Later the mental condition shows improvement. The dulness and apathy are the first to give away. Then the weight gradually diminishes and the hair thins out. A constantly clammy skin is a certain indication for a smaller dose of thyroid. He instanced a case of cretinism occurring in a girl six years of age. She is at present in good health. Her treatment was temporarily stopped at the second year. This was followed immediately by a return of symptoms. The hair of cretins, even under the most judicious treatment, will never become normal.

Dr. William L. Stowell mentioned four cases of cretinism which he at present had under treatment. The first patient is a male, twenty-one years of age. He is three feet tall and weighs 44 pounds. He has gained rapidly under treatment, appears happy and is much pleased with toys. The second case was that of a female, nineteen years old. Her weight had decreased by treatment, but her disposition was still unimproved, for she continued to be extremely quarrelsome. The third case was that of a boy. In many respects this history is remarkable. The girth of the trunk had diminished and the individual had actually gained three inches in height. In this case it was further noteworthy from the fact that a plaster cast applied for the treatment of a fractured leg had caused an erosion ulcer. Under thyroid this ulcer healed very rapidly, thus demonstrating the profound effect of the secretion on metabolism. Dr. Stowell said that as to treatment by transplantation by thyroid glands into the abdominal cavity or other regions of the patient's body, it had been noticed that such transplantation was invariably followed by atrophy of the transplanted gland. Benefit has usually resulted for from five to six months only.

Intravenous injection had been used, but was now virtually given up. The best treatment is probably the continued giving of the gland by mouth.

Dr. Terriberry mentioned a case of cretinism which was particularly interesting because of the hereditary deductions to be drawn from it. The mother had given birth to two cretin children. She was then treated by thyroid and gave birth to a third child, which was entirely normal.

BOOK REVIEWS.

A **DICTIONARY OF NEW MEDICAL TERMS**, including upward of 38,000 words and many useful tables, being a supplement to "an illustrated dictionary of Medicine, Biology and Allied Sciences." By **GEORGE M. GOULD, A.M., M.D.**, author of "The Student's Medical Dictionary," 30,000 medical words pronounced and defined, "The Meaning and Method of Life," "Borderland Studies," editor of *American Medicine*, etc. Based upon recent scientific literature. P. Blakiston's Son & Co., Philadelphia.

As Dr. GOULD himself says, nothing so well illustrates the astonishing vitality and progress of present day medical science as its unparalleled multiplication of words; that in a decade over 30,000 new terms should have been devised is almost incredible. It is doubtful if any other science or object of study has ever shown such a phenomenon. That the work of collecting the new words is well done goes almost without saying. That it is complete, its surprising size under the circumstances is the best evidence. Undoubtedly a great many words have been admitted to it which have as yet scarcely vindicated for themselves a place in the language, but then the book is not meant so much as a language treasury as a help to the busy medical reader.

Under these circumstances, however, we consider it unfortunate that there should be so many compulsory references to Dr. Gould's larger dictionary. There are a large number of words for which no direct definition is given, though phrases in which the words are used and compound terms of which they form a part are freely defined. Not infrequently the consultant of the dictionary will have to turn to the larger dictionary for the essential significance which might, it seems to us, have readily been given in a few words without adding materially to the bulk of the book. This will, we fear, detract from the usefulness for the busy doctor, who must read as he runs, of a very valuable work.

PRINCIPLES OF PHYSIOLOGICAL PSYCHOLOGY. By **WILHELM WUNDT**, Professor of Philosophy in the University of Leipzig. Translated from the Fifth German Edition (1902). By **EDWARD BRADFORD TITCHENER**, Sage Professor of Psychology in the Cornell University. The Macmillan Co., New York.

TWENTY-EIGHT years is a long life for a book, yet such is the age of the fifth edition of Professor Wundt's work, a translation of which is before us.

Of the book itself it is unnecessary to speak. Workers in psychology have recognized it as the leader in its subject for a number of years. We congratulate ourselves that we have it in such a commendable form and felicitate Dr. Titchener on the final success of his hopes and ambitions.

We feel that the present work will give a renewed impetus to the awakening sense of the needs of a psychological substratum for correct interpretation of morbid mental phenomena, and that the book will meet the requirements of the alienist more particularly, while also contributing largely to the culture of the progressive general practitioner.

BOOKS RECEIVED.

ESSENTIALS OF NERVOUS DISEASES AND INSANITY. By **Dr. J. C. Shaw.** Edited by **Dr. S. E. Jelliffe.** Fourth Edition. 12mo, 196 pages. Illustrated. W. B. Saunders & Co., New York, Philadelphia and London.